DUAL CHANNEL POLYPHONIC SYNTHESIZER

CS70M

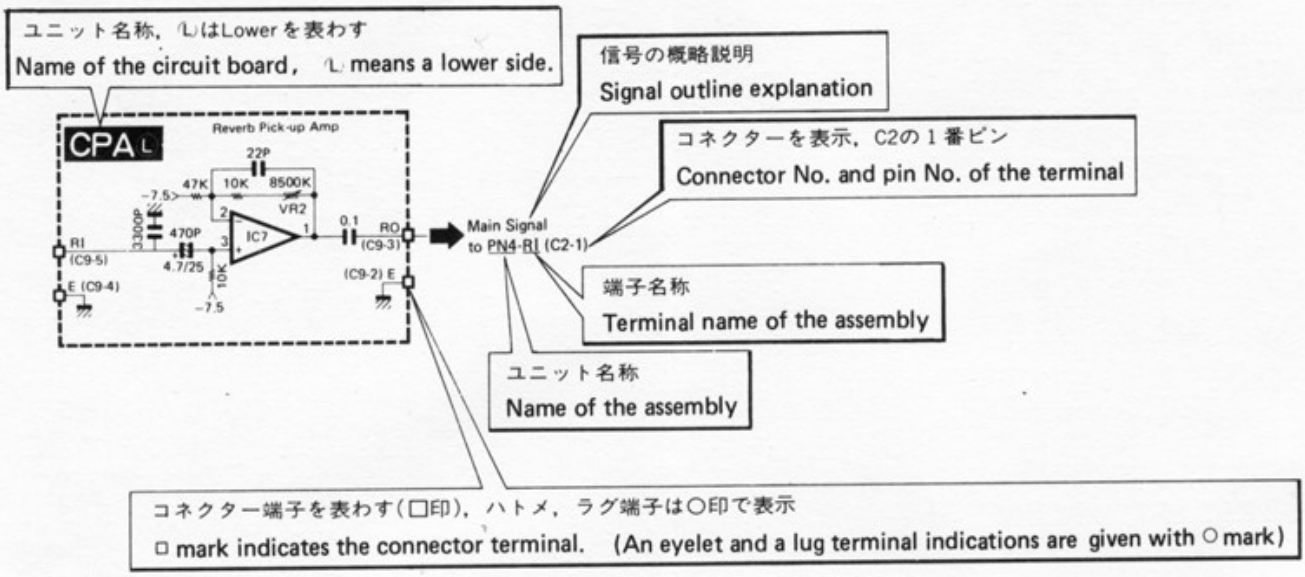
SERVICE MANUAL

006476

'81.8 1.8K Printed in Japan

CONTENTS（目次）

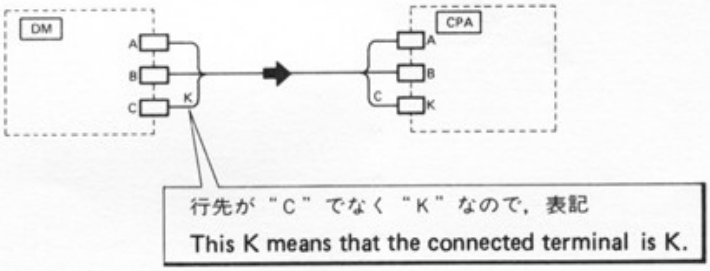
1, 回路図の見方 CIRCUIT DIAGRAM



上図はCPAⓁユニット，コネクター＃9の3番端子ROよりパネル4のコネクター＃2の1番端子R1へ結線されている事を示しています。
尚，総合回路図において，信号およびデータラインの結線を，複雑さを避ける為にまとめて表示している場合がありますが，同一端子名どうしが結ばれる時は，行先端子名を表記せず，異なる端子と接続する相手端子を表記しています。

Above is a sample interconnecting code that is assigned to terminal RO of connector 9, pin 3 on CPA circuit board, the line leaving RO connects to the terminal RI of connector 2, pin 1 on PN1 circuit board. In an overall circuit diagram, in order to avoid confusion the signal lines and data lines will be shown as one line.
In this case, when an output terminal and the terminal to which it connects (connected terminal) is the same, its name is not written on the line, however, if the terminal which the wire goes to (connected terminal) is different, its name is shown on the line.

(例)



★信号表示

キーコードデータ(オシロスコープで測定可)	Key code data	(possible to measure with a oscilloscope)
パルス形信号(オシロスコープで測定可)	Pulse form signal	(— do. —)
トリガーパルス(オシロスコープで測定可)	Trigger pulse	(— do. —)
楽音信号(シグナルトレーサーで可聴)	Audio signal	(possible to measure with signal tracer)
低周波変調信号(テスターで測定可)	Low frequency modulation signal	(possible to measure with VOM)
DCコントロール(テスターで測定可)	DC control signal	(— do. —)

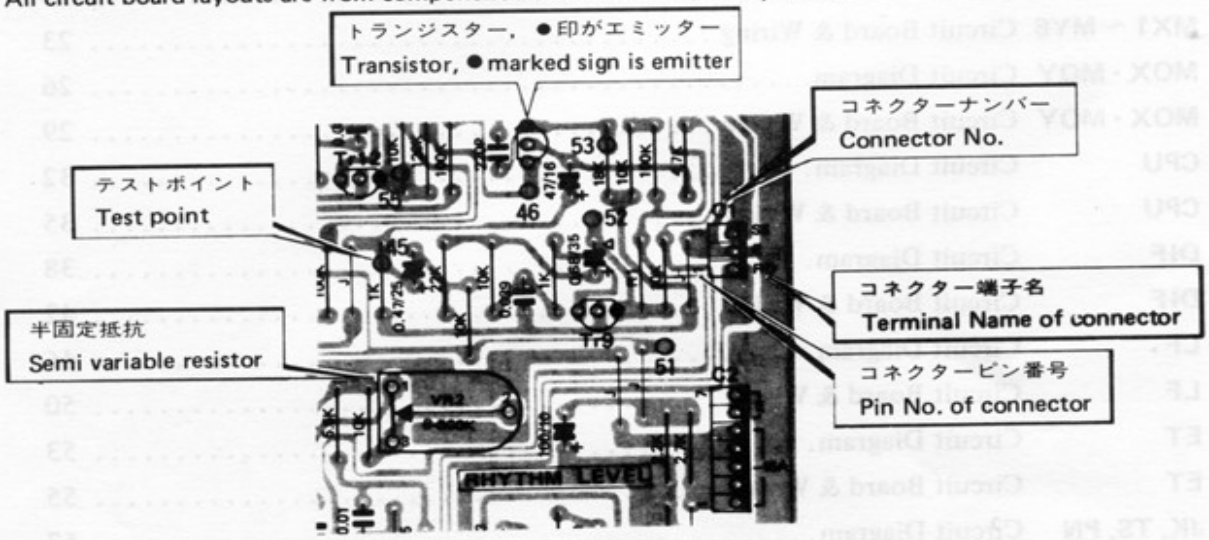
CODING GUIDE (活用の手引)

- ●全てのキャパシターは特に指定がない限りμF表示です。
- ●全ての抵抗は特に指定がない限り1/4Wです。
- ●全てのスイッチ、ボタン類はOFFポジションを示しています。
- ●図中のK印はセラミックキャパシター1000PFを示しています。

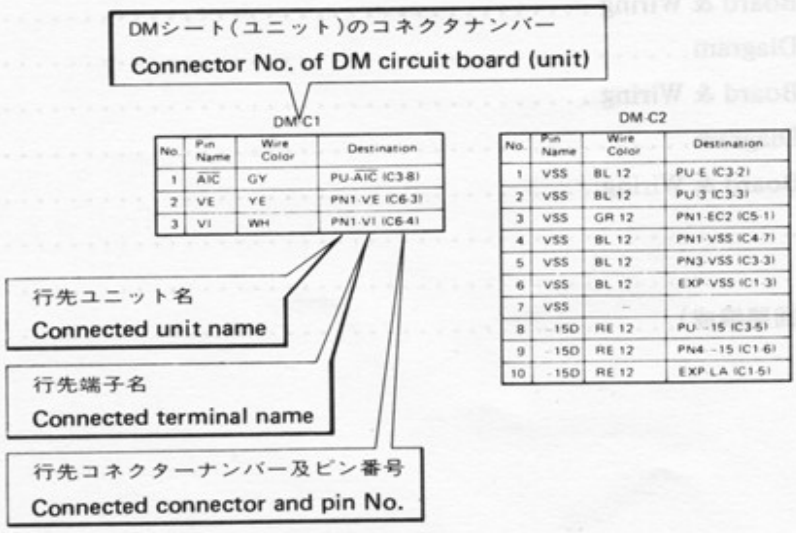
- All Capacitors are in μF unless otherwise specified.
- All Resistors are 1/4 watts unless otherwise specified.
- All Keyswitches, Tabswitches and push button switches show "OFF" position.
- "K" marked in Figs indicates 1000PF Ceramic Capacitors.

2, 基板図の見方 CIRCUIT BOARD

＊断りのない場合は部品側からの表記です。
All circuit board layouts are from component side unless otherwise specified.



コネクターの接続はコネクター表にて表示しております。
Show the Connection Table about the connection.



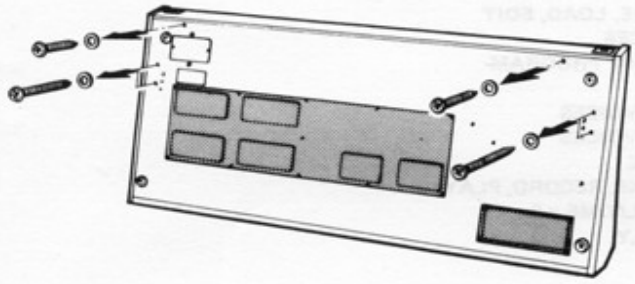
DM-C1

No.	Pin Name	Wire Color	Destination
1	AIC	GY	PU-AIC (C3-8)
2	VE	YE	PN1-VE (C6-3)
3	VI	WH	PN1-VI (C6-4)

DM-C2

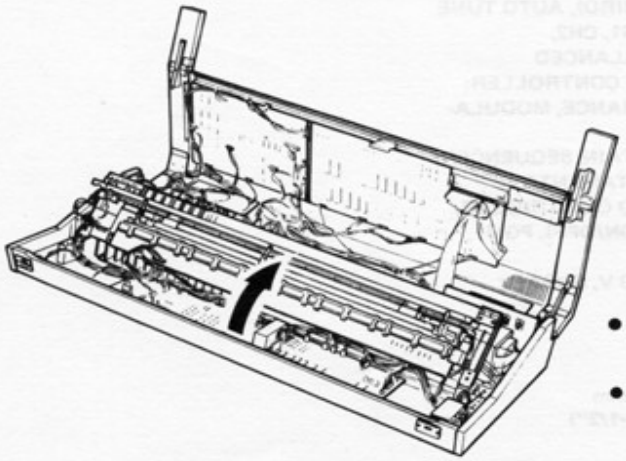
No.	Pin Name	Wire Color	Destination
1	VSS	BL 12	PU-E (C3-2)
2	VSS	BL 12	PU-3 (C3-3)
3	VSS	GR 12	PN1-EC2 (C5-1)
4	VSS	BL 12	PN1-VSS (C4-7)
5	VSS	BL 12	PN3-VSS (C3-3)
6	VSS	BL 12	EXP-VSS (C1-3)
7	VSS	–	
8	-15D	RE 12	PU--15 (C3-5)
9	-15D	RE 12	PN4--15 (C1-6)
10	-15D	RE 12	EXP-LA (C1-5)

Disassembly Procedure（分解手順）



● Remove 6 screws from the bottom cover.
●図のようにケース底側のネジ合計6本をはずします。

● Lift the panel as shown in the figure until it is fully opened.
●パネル部を図のように持ち上げ回転させて開きます。



● The keyboard can now be lifted as shown in the figure.

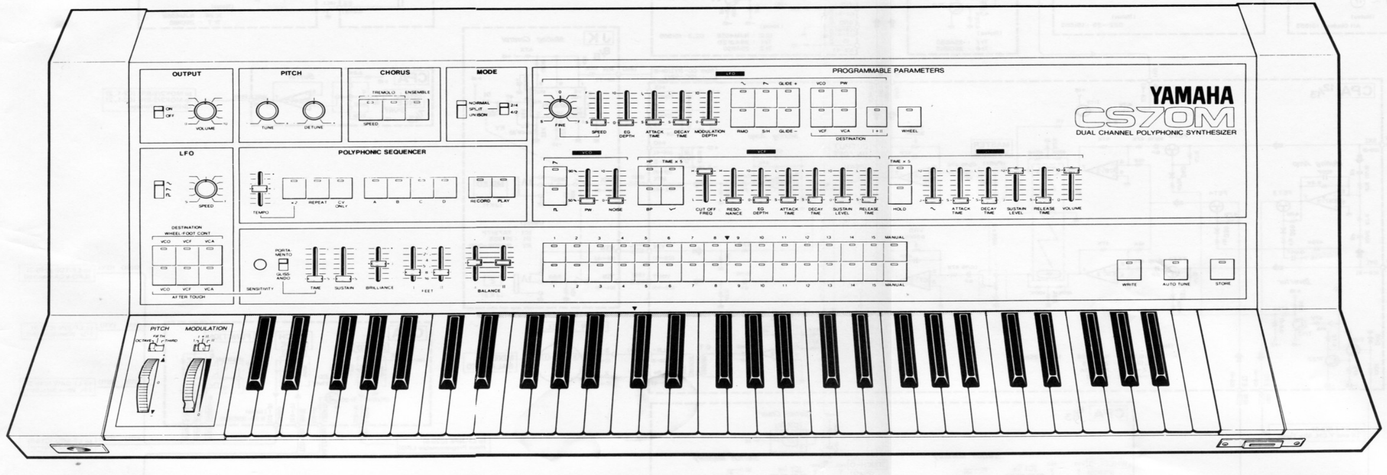
●パネルを上げた状態で鍵盤部を図のように回転させることができます。

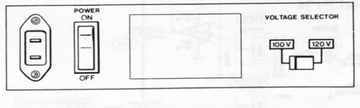
SPECIFICATIONS（総合仕様）

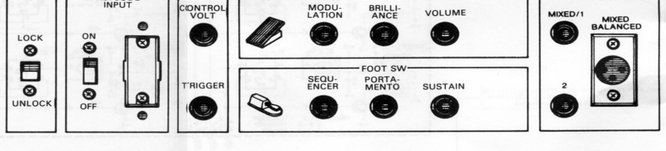
KEYBOARD	61 KEYS, C_1 ～C_6 (5 OCTAVES)
SYSTEM	12 VCO, 12 VCF, 12 VCA, 24 EG, 2 LFO
OUTPUT	UP TO 6 NOTES
PROGRAMMER	CHI/CHII: EACH CH1 ～15. PANEL WRITE, STORE, LOAD, EDIT
ASSIGN MODE	NORMAL: 6 VOICES SPLIT (SPLIT POINT PROGRAMMABLE): 2 VOICES + 4 VOICES 4 VOICES + 2 VOICES UNISON: 1 VOICE
SEQUENCER	4 MEMORY BANKS, RECORD, PLAY TEMPO: NORMAL/TIME x 2 REPEAT, CV ONLY
PROGRAMMABLE PARAMETERS	
VCO	WAVE: ⊓, ⋀ FEET: 2, 2-2/3, 4, 5-1/3, 8, 16 WHITE NOISE
VCF	CUT OFF FREQ, RESONANCE, HPF/BPF/LPF, A.D.S.R. EG: DEPTH, TIME (NORMAL/TIME x 5), POLARITY (⌒, ⌣)
VCA	SINE WAVE LEVEL, A.D.S.R. EG TIME (NORMAL/TIME x 5) VOLUME
LFO	SPEED: 0.1 ～100 Hz SPEED FINE: ± 10% EG DEPTH, A.D. MODULATION DEPTH WAVE: ∿, ⋀ S/H, GLIDE +/–, RMO
LFO	SPEED: 0.05 ～50 Hz WAVE: ∿, ⋀, ⊓ MODULATION: WHEEL/AFTER TOUCH/FOOT PEDAL DESTINATION: VCO, VCF, VCA AFTER TOUCH SENSITIVITY
EFFECTS	ENSEMBLE/TREMOLO (SLOW/FAST), SUSTAIN TIME, BRILLIANCE, GLISSANDO/PORTAMENTO SPEED, PROGRAMMABLE LFO: CHI + CHII, WHEEL, HOLD
PITCH	MASTER, DETUNE CHII, WHEEL (OCTAVE/FIFTH/THIRD), AUTO TUNE
JACKS	OUTPUT: MIXED/CH1, CH2, MIXED BALANCED HEADPHONE, FOOT CONTROLLER: VOLUME, BRILLIANCE, MODULATION FOOT SWITCH: SUSTAIN, SEQUENCER, PORTAMENTO SOLO OUT CV, SOLO OUT TRIGGER, KEY CODE INPUT (ON/OFF), PGM LOCK/UNLOCK
POWER SUPPLIES	100, 120, 220 and 240 V, 50/60 Hz
POWER CONSUMPTION	UL, CSA 110W GENERAL 120W
DIMENSIONS (W x H x D)	1100 x 188.5 x 498.5 mm (43-1/4" x 7-1/2" x 19-1/2")
WEIGHT	28.8 kg (63.9 lbs)

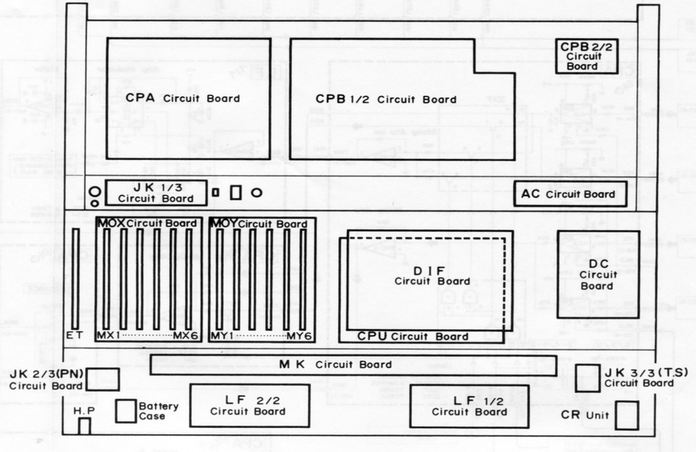
Specifications subject to change without notice.

PANEL LAYOUT • UNIT LAYOUT

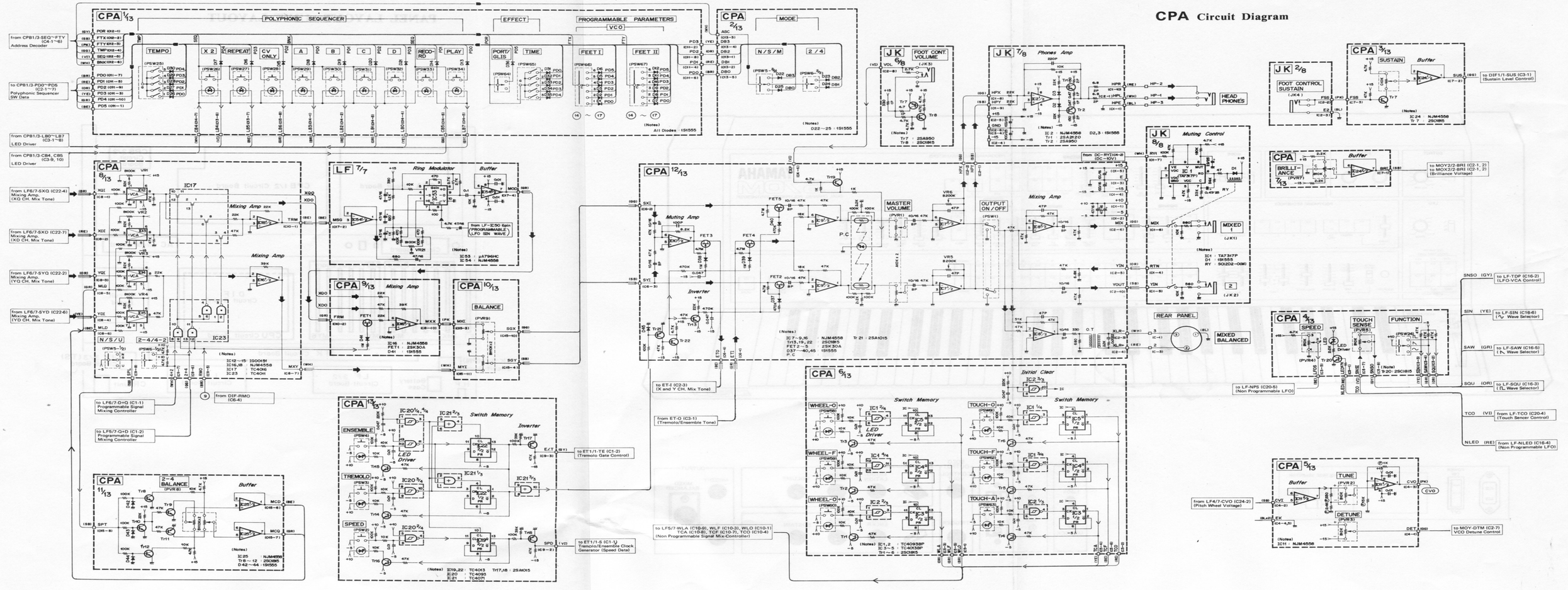


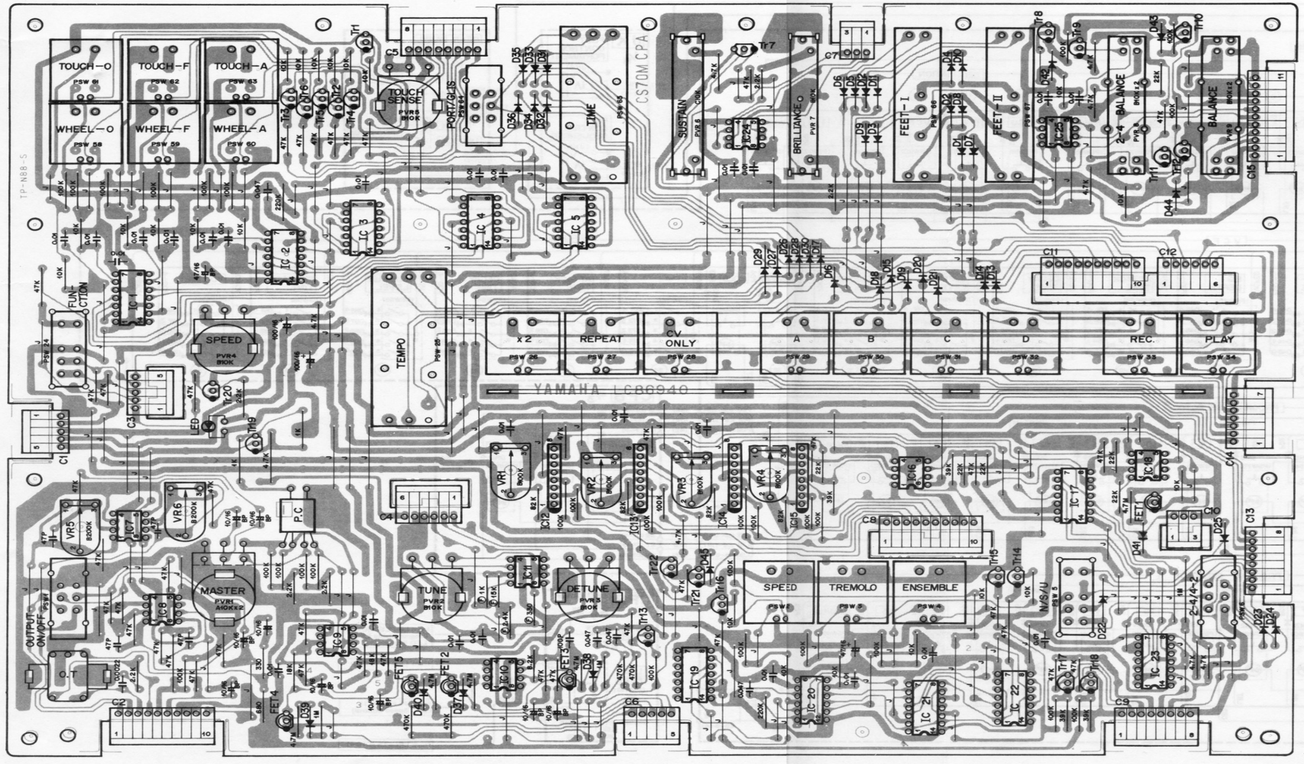






CPA Circuit Diagram





View from the printed pattern side of the circuit board.

KEP-NA80771-14 ⚠

CPA Circuit Board & Wiring

C1

Pin No.	Pin Name	Wire Color	Destination
1	+10	GR	DC-+10 (C1-5)
2	–5	BE	DC- –5 (C1-6)
3	GND	BL	DC-AE (C1-2)
4	–15	YE	DC- –15 (C1-9)
5	+15	BR	DC-+15 (C1-7)

C2

Pin No.	Pin Name	Wire Color	Destination
1	HPY	SB	JK-HPY (C1-9)
2	HPX	GG	JK-HPX (C1-8)
3	XLR–	WH	XLR-3 (C1-1)
4	XLR+	RE	XLR-2 (C1-3)
5	YIN	S OR	JK-RTN (C1-4)
6	MIX	S GG	JK-MIX (C1-6)
7	SE	S GG S	
8	GND	BL	JK-E (C1-2)
9	SE	S SB S	
10	YOUT	S SB	JK-YIN (C1-5)

C3

Pin No.	Pin Name	Wire Color	Destination
1	LED	RE	LF-NLED (C16-4)
2	SQU	OR	LF- SQU (C16-3)
3	SIN	YE	LF-SIN (C16-6)
4	SAW	GR	LF-SAW (C16-5)
5	LFOS	BE	LF-NPS (C20-5)

C4

Pin No.	Pin Name	Wire Color	Destination
1	DET	GG	MOY-DTN (C2-7)
2	CVI	SB	LF- CVO (C24-2)
3	CVO	PK	DIF-CVO (C1-2)
4	EK1	BL	LF-EK (C24-6)
5	EK2	BL	DIF-EK (C1-3)
6	EXP	VI	JK-VOL (C2-8)

C5

Pin No.	Pin Name	Wire Color	Destination
1	WLO	BR	LF-WLO (C10-1)
2	TCO	RE	LF-TCO (C10-4)
3	WLA	OR	LF-WLA (C10-9)
4	TCA	YE	LF-TCA (C10-8)
5	WLF	GR	LF-WLF (C10-3)
6	TCF	BE	LF-TCF (C10-7)
7	SNSI	VI	LF-TCO (C20-4)
8	SNSO	GY	LF-TDP (C16-2)

C6

Pin No.	Pin Name	Wire Color	Destination
1	ETI	S GR	ET-O (C3-1)
2	SKI	S GG	CPA-SGX (C15-10)
3	SYI	S SB	CPA-SGY (C15-4)
4	ETO	S BE	ET-I (C2-3)
5	SE	S BE S	

C7

Pin No.	Pin Name	Wire Color	Destination
1	BRI	SB	MOY-BRI (C2-1)
2	SUS	GG	DIF-SUS (C3-1)
3	FSS	PK	JK-FSS (C2-2)

C14

Pin No.	Pin Name	Wire Color	Destination
1	LB3	BR	CPB-LB0 (C3-8)
2	LB2	RE	CPB-LB1 (C3-7)
3	LB1	OR	CPB-LB2 (C3-6)
4	LB0	YE	CPB-LB3 (C3-5)
5	LB7	GY	CPB-LB7 (C3-1)
6	CB5	GG	CPB-CB5 (C3-10)
7	CB4	WH	CPB-CB4 (C3-9)

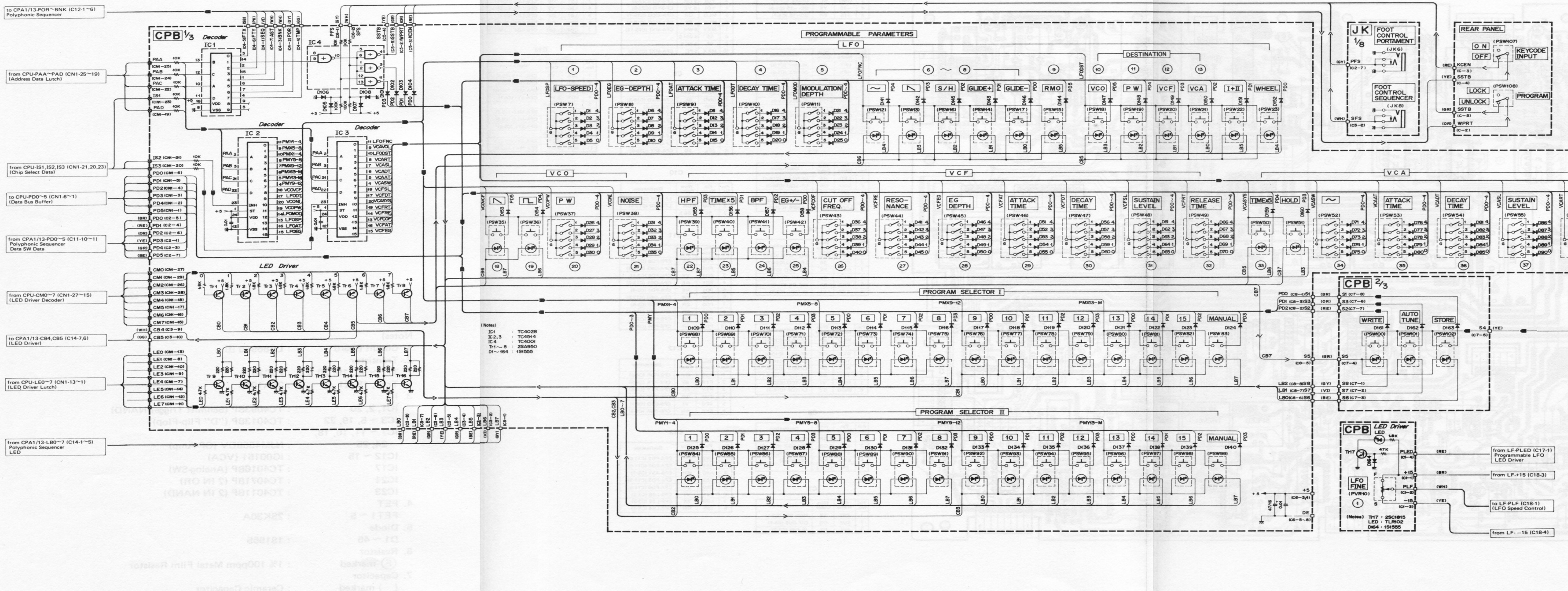
C15

Pin No.	Pin Name	Wire Color	Destination
1	–15	YE	CPA- –15 (C9-4)
2	GND	BL	CPA-GND (C9-1)
3	MYI	S PK	CPA-MXX (C8-10)
4	SGY	S SB	CPA-SYI (C6-3)
5	SE	S SB S	
6	MCD	BE	CPA-MLD (C8-6)
7	MCQ	GR	CPA-MLQ (C8-5)
8	SPT	SB	CPA-SPL (C9-8)
9	SE	S GG S	
10	SGY	S GG	CPA-SYI (C6-3)
11	MYI	S WH	CPA-MXY (C8-7)

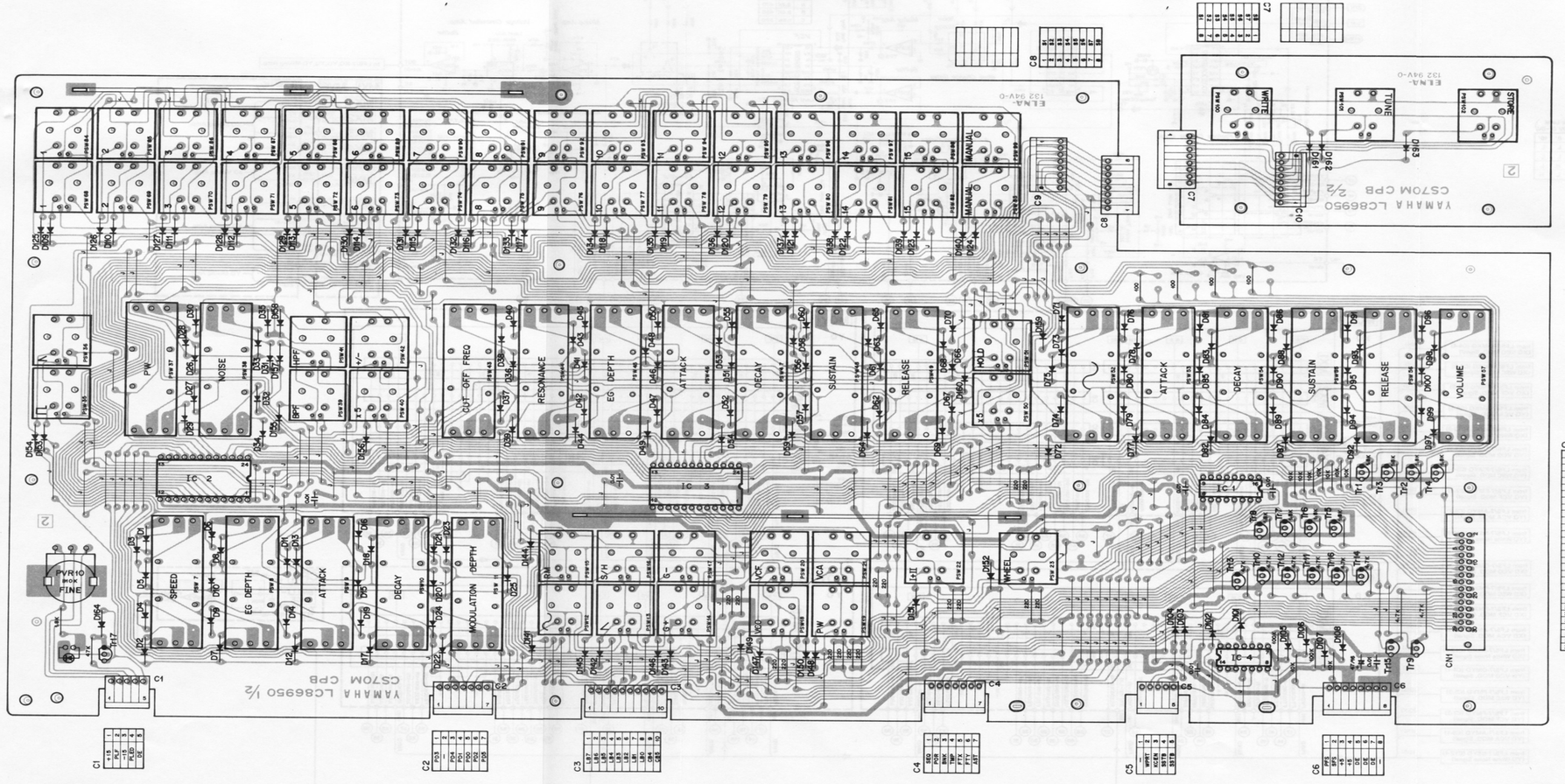
Notes)

1. Circuit Board : LC86940 [1]
2. Transistor
   - Tr1 ~ 16, 19, 20, 22 : 2SC1815
   - Tr17, 18, 21 : 2SA1015
3. IC
   - IC1, 2, 20 : TC4093BP (Schmitt Trigger NAND)
   - IC3 ~ 5, 19, 22 : TC4013BP ("D" Flip-Flop)
   - IC7 ~ 11, 16, 18, 24, 25 : NJM4558DV (OP-Amp)
   - IC12 ~ 15 : iG00151 (VCA)
   - IC17 : TC4016BP (Analog-SW)
   - IC21 : TC4071BP (2 IN OR)
   - IC23 : TC4011BP (2 IN NAND)
4. FET
   - FET1 ~ 5 : 2SK30A
5. Diode
   - D1 ~ 45 : 1S1555
6. Resistor
   - (F) marked : 1% 100ppm Metal Film Resistor
7. Capacitor
   - ( ) marked : Ceramic Capacitor

CPB Circuit Diagram



CPB Circuit Board & Wiring



View from the printed pattern side of the circuit board.

KEP-NA80772-14 ⚠

C1

Pin No.	Pin Name	Wire Color	Destination
1	+15	BR	LF-+15 (C18-3)
2	PLF	WH	LF-PLF (C18-1)
3	−15	YE	LF-−15 (C18-4)
4	PLED	RE	LF-PLED (C17-1)
5	DE	BL	CPB-DE (C6-7)

C2

Pin No.	Pin Name	Wire Color	Destination
1	PD3	YE	CPA-PD3 (C11-3)
2	—	—	—
3	PD4	GR	CPA-PD4 (C11-10)
4	PD1	RE	CPA-PD1 (C11-5)
5	PD0	BR	CPA-PD0 (C11-7)
6	PD2	OR	CPA-PD2 (C11-9)
7	PD5	BE	CPA-PD5 (C11-1)

C3

Pin No.	Pin Name	Wire Color	Destination
1	LB7	GY	CPA-LB7 (C14-5)
2	LB6	VI	CPA-LB4 (C13-6)
3	LB5	BE	CPA-LB5 (C13-7)
4	LB4	GR	CPA-LB6 (C13-8)
5	LB3	YE	CPA-LB0 (C14-4)
6	LB2	OR	CPA-LB1 (C14-3)
7	LB1	RE	CPA-LB2 (C14-2)
8	LB0	BR	CPA-LB3 (C14-1)
9	CB4	WH	CPA-CB4 (C14-7)
10	CB5	GG	CPA-CB5 (C14-6)

C4

Pin No.	Pin Name	Wire Color	Destination
1	SEQ	VI	CPA-SEQ (C12-5)
2	POR	GY	CPA-POR (C12-1)
3	BNK	WH	CPA-BNK (C12-6)
4	TMP	GG	CPA-TMP (C12-4)
5	FTX	SB	CPA-FTX (C12-2)
6	FTY	PK	CPA-FTY (C12-3)
7	AST	WH	CPA-ASC (C13-3)

C5

Pin No.	Pin Name	Wire Color	Destination
1	—		—
2	WPRT	OR	
3	KCEN	RE	
4	SSTB	YE	
5	SSTB	GR	

C6

Pin No.	Pin Name	Wire Color	Destination
1	PFS	GY	JK-PFS (C2-7)
2	SFS	WH	JK-SFS (C3-2)
3	+5	RE	DC-+5 (C1-4)
4	+5	—	—
5	DE	BL	DC-DE (C1-1)
6	DE	—	—
7	DE	BL	CPB-DE (C1-5)
8	—	—	—

C7

Pin No.	Pin Name	Wire Color	Destination
1	S8	GY	CPB-S8 (C8-8)
2	S7	VI	CPB-S7 (C8-7)
3	S6	BE	CPB-S6 (C8-6)
4	S5	GR	CPB-S5 (C8-5)
5	S4	YE	CPB-S4 (C8-4)
6	S3	OR	CPB-S3 (C8-3)
7	S2	RE	CPB-S2 (C8-2)
8	S1	BR	CPB-S1 (C8-1)

C8

Pin No.	Pin Name	Wire Color	Destination
1	S1	BR	CPB-S1 (C7-8)
2	S2	RE	CPB-S2 (C7-7)
3	S3	OR	CPB-S3 (C7-6)
4	S4	YE	CPB-S4 (C7-5)
5	S5	GR	CPB-S5 (C7-4)
6	S6	BE	CPB-S6 (C7-3)
7	S7	VI	CPB-S7 (C7-2)
8	S8	GY	CPB-S8 (C7-1)

CN1

Pin No.	Pin Name	Wire Color	Destination
1	PD5		CPU-PD5 (CN1-1)
2	PD4		CPU-PD4 (CN1-2)
3	PD3		CPU-PD3 (CN1-3)
4	PD2		CPU-PD2 (CN1-4)
5	PD1		CPU-PD1 (CN1-5)
6	PD0		CPU-PD0 (CN1-6)
7	LE4		CPU-LE4 (CN1-7)
8	LE1		CPU-LE1 (CN1-8)
9	LE3		CPU-LE3 (CN1-9)
10	LE2		CPU-LE2 (CN1-10)
11	LE7		CPU-LE7 (CN1-11)
12	LE6		CPU-LE6 (CN1-12)
13	LE0		CPU-LE0 (CN1-13)
14	LE5		CPU-LE5 (CN1-14)
15	CM7		CPU-CM7 (CN1-15)
16	CM6		CPU-CM6 (CN1-16)
17	CM5		CPU-CM5 (CN1-17)
18	CM4		CPU-CM4 (CN1-18)
19	PAD		CPU-PAD (CN1-19)
20	IS3		CPU-IS3 (CN1-20)
21	IS2		CPU-IS2 (CN1-21)
22	PAC		CPU-PAC (CN1-22)
23	IS1		CPU-IS1 (CN1-23)
24	PAB		CPU-PAB (CN1-24)
25	PAA		CPU-PAA (CN1-25)
26	CM2		CPU-CM2 (CN1-26)
27	CM0		CPU-CM0 (CN1-27)
28	CM3		CPU-CM3 (CN1-28)
29	CM1		CPU-CM1 (CN1-29)
30	—		CPU-CN1-30

CN1

1	PD5
2	PD4
3	PD3
4	PD2
5	PD1
6	PD0
7	LE4
8	LE1
9	LE3
10	LE2
11	LE7
12	LE6
13	LE0
14	LE5
15	CM7
16	CM6
17	CM5
18	CM4
19	PAD
20	IS3
21	IS2
22	PAC
23	IS1
24	PAB
25	PAA
26	CM2
27	CM0
28	CM3
29	CM1
30	—

Notes)

1. Circuit Board : LC86950 [2]
2. Transistor
   - Tr1 ~ 8 : 2SA950
   - Tr9 ~ 17 : 2SC1815
3. IC
   - IC1 : TC4028BP
   - IC2, 3 : TC4514BP (Decoder)
   - IC4 : TC4001BP (2 IN NOR)
4. Diode
   - D1 ~ 164 : 1S1555
5. Capacitor
   - ( ) marked : Ceramic Capacitor

	ADDRESS NO	PSW	CPB FUNCTION PARAMETERS	DIF	LF	FUNCTION
LFO	①	7	SPEED	PLS (C3-2)	PLS (C9-4)	
	②	8	EG－DEPTH	EGD (C3-3)	EGD (C9-5)	
	③	9	ATTACK－TIME	LAT (C16-3)	LAT (C19-2)	
	④	10	DECAY－TIME	LDY (C16-4)	LDY (C19-1)	
	⑤	11	MODULATION－DEPTH	PDP (C3-4)	PDP (C15-6)	
	⑥~⑧	12	～			
		13	∧	6 LFI (C6-6)	LF3 (C15-2)	
		16	S/H	7 LF2 (C6-7)	LF2 (C15-3)	
		14	GLIDE ＋	8 LF3 (C7-3)	LF1 (C15-4)	
		17	GLIDE －			
	⑨	15	RMO	RMO (C6-4)	CPA-RMO (C9-5)	
	⑨	15	RMO	RMO (C6-5)	RMO (C15-1)	
	⑩	18	VCO DESTINATION	PLO (C7-5)	PLO (C6-4)	
	⑪	19	PW	PLP (C7-2)	PLP (C1-5)	
	⑫	20	VCF	PLF (C6-3)	PLF (C1-6)	
	⑬	21	VCA	PLA (C6-2)	PLA (C1-7)	
	㉒	23	WHEEL	ADD (C7-4)	ADD (C15-5)	
	㉓Y	22	I＋II	X＋Y (C6-1)	X＋Y (C1-8)	

※ LFO WAVE SELECTOR (Logic Level (L:+0V O~5V))

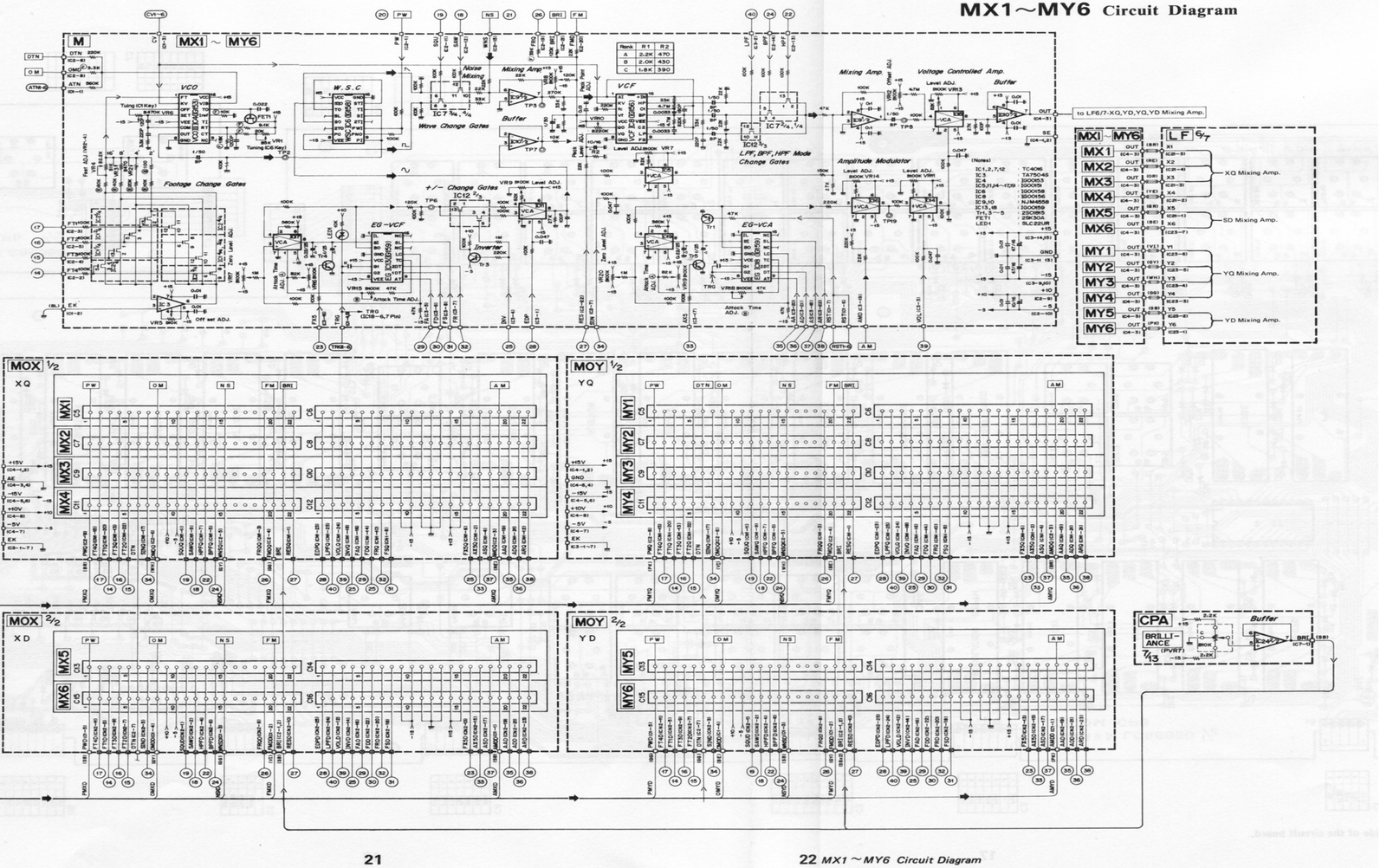
	～	∧	S/H	G+	G−
LF3	L	L	L	L	H
LF2	L	L	H	H	L
LF1	L	L	L	H	L

FOOTAGE CHANGE (Logic Level (L:+0V O~5V))

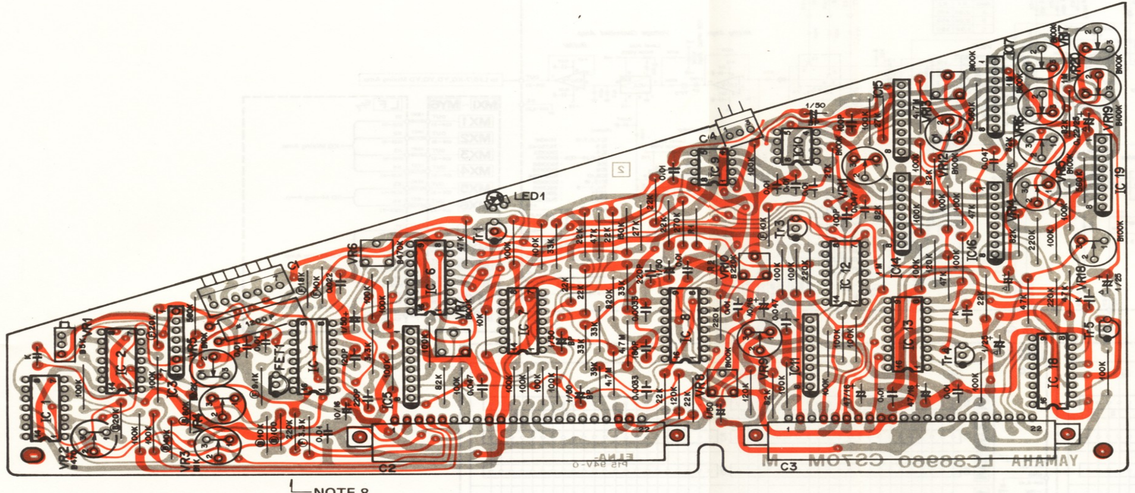
	2′	2⅔′	4′	5⅓′	8′	16′
FT1	H	L	L	L	L	L
FT2	L	H	H	L	L	L
FT3	L	H	L	H	H	L
FT4	L	L	L	H	L	H

	ADDRESS NO	PSW NO	CPB FUNCTION PARAMETERS	DIF Name	XQ	XD	YQ	YD	MOX, MOY Name	XQ YQ	XD YD	M MX1 ～ MX6 MY1 ～ MY6
VCO	⑭	66,67	FEET I FEET II	FT1	(CN1-20)	(CN2-5)	(CN3-20)	(CN4-5)	FT1	(CN1-20)	(CN2-5)	FT1 (C2-3)
	⑮		(XQ, XD) (YQ, YD)	FT2	(CN1-22)	(CN2-7)	(CN3-22)	(CN4-7)	FT2	(CN1-22)	(CN2-7)	FT2 (C2-5)
	⑯			FT3	(CN1-13)	(CN2-19)	(CN3-13)	(CN4-19)	FT3	(CN1-13)	(CN2-19)	FT3 (C2-4)
	⑰			FT4	(CN1-15)	(CN2-21)	(CN3-15)	(CN4-21)	FT4	(CN1-15)	(CN2-21)	FT4 (C2-2)
	⑱	35	∧	SAW	(CN1-9)	(CN2-2)	(CN3-9)	(CN4-2)	SAW	(CN1-9)	(CN2-2)	SAW (C2-12)
	⑲	36	⊓	SQU	(CN1-11)	(CN2-4)	(CN3-11)	(CN4-4)	SQU	(CN1-11)	(CN2-4)	SQU (C2-11)
	⑳	37	PW	P	(C6-5)	(C11-3)	(C11-2)	(C15-2)	PM	(C2-8)	(C1-5)	PW (C2-1)
	㉑	38	NOISE	NL	(C1-6)	(C6-4)	(C11-1)	(C15-5)	NS	(C2-5)	(C1-3)	WNS (C2-15)
VCF	㉒	39	HPF	HPF	(CN1-7)	(CN2-6)	(CN3-7)	(CN4-6)	HPF	(CN1-7)	(CN2-6)	HPF (C2-13)
	㉓	40	TIME×5	FX5	(CN1-6)	(CN2-13)	(CN3-6)	(CN4-13)	FX5	(CN1-6)	(CN2-13)	FX5 (C3-16)
	㉔	41	BPF	BPF	(CN1-5)	(CN2-8)	(CN3-5)	(CN4-8)	BPF	(CN1-5)	(CN2-8)	BPF (C2-14)
	㉕	42	～	INV	(CN1-18)	(CN2-14)	(CN3-18)	(CN4-14)	INV	(CN1-18)	(CN2-14)	INV (C3-4)
	㉖	43	CUT OFF FREQ.	FRQ	(CN1-8)	(CN2-9)	(CN3-8)	(CN4-9)	FRQ	(CN1-8)	(CN2-9)	FRQ (C2-19)
	㉗	44	RESONANCE	RES	(CN1-1)	(CN2-10)	(CN3-1)	(CN4-10)	RES	(CN1-1)	(CN2-10)	RES (C2-22)
	㉘	45	EG－DEPTH	EDP	(CN1-23)	(CN2-25)	(CN3-23)	(CN4-25)	EDP	(CN1-23)	(CN2-25)	EDP (C3-1)
	㉙	46	ATTACK TIME	FA	(CN1-16)	(CN2-18)	(CN3-16)	(CN4-18)	FA	(CN1-16)	(CN2-18)	FA (C3-5)
	㉚	47	DECAY TIME	FD	(CN1-14)	(CN2-22)	(CN3-14)	(CN4-22)	FD	(CN1-14)	(CN2-22)	FD (C3-6)
	㉛	48	SUSTAIN LEVEL	FS	(CN1-8)	(CN2-18)	(CN3-18)	(CN4-18)	FS	(CN1-8)	(CN2-18)	FS (C3-8)
	㉜	49	RELEASE TIME	FR	(CN1-10)	(CN2-20)	(CN3-10)	(CN4-20)	FR	(CN1-10)	(CN2-20)	FR (C3-7)
VCA	㉝	50	TIME×5	AX5	(CN1-2)	(CN2-15)	(CN3-2)	(CN4-15)	AX5	(CN1-10)	(CN2-15)	AX5 (C3-17)
	㉞	52	～	SIN	(CN1-17)	(CN2-3)	(CN3-17)	(CN4-3)	SIN	(CN1-17)	(CN2-3)	NIS (C2-7)
	㉟	53	ATTACK TIME	AA	(CN1-19)	(CN2-19)	(CN3-19)	(CN4-19)	AA	(CN1-19)	(CN2-19)	AA (C3-20)
	㊱	54	DECAY TIME	AD	(CN1-21)	(CN2-21)	(CN3-21)	(CN4-21)	AD	(CN1-21)	(CN2-21)	AD (C3-21)
	㊲	55	SUSTAIN LEVEL	AS	(CN1-4)	(CN2-17)	(CN3-4)	(CN4-17)	AS	(CN1-4)	(CN2-17)	AS (C3-18)
	㊳	56	RELEASE TIME	AR	(CN1-12)	(CN2-23)	(CN3-12)	(CN4-23)	AR	(CN1-12)	(CN2-23)	AR (C3-22)
	㊴	57	VOLUME	VOL	(CN1-24)	(CN2-12)	(CN3-24)	(CN4-12)	VOL	(CN1-24)	(CN2-12)	VOL (C3-3)
X VCF	㊵		LPF (BPF, HPF OFF)	LPF	(CN1-25)	(CN2-24)	(CN3-25)	(CN4-24)	LPF	(CN1-25)	(CN2-24)	LPF (C3-2)

MX1～MY6 Circuit Diagram



MX1～MY6 Circuit Board & Wiring



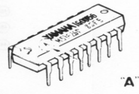
View from the component side of the circuit board.

Notes)
1. Circuit Board : LC86960 Ⓩ
2. Transistor
   Tr1, 3～5 : 2SC1815
3. FET
   FET1 : 2SK30A
4. IC
   IC1, 2, 7, 12 : TC4016BP (Analog-SW)
   IC3 : TA7504S
   IC4 : iG00153 (VCOIII)
   IC5, 11, 14～17, 19 : iG00151 (VCA)
   IC6 : iG00158
   IC8 : iG00156 (+VCF)
   IC9, 10 : NJM4558DV (OP-Amp)
   IC13, 18 : iG00159
5. Capacitor
   K marked : 1000P Ceramic Capacitor
   ( ) marked : Ceramic Capacitor
   * marked : Polystyrene Capacitor
   ▲marked : Solid Alminum Capacitor
6. Resistor
   Ⓑ marked : 0.1% 25ppm Metal Film Resistor
   Ⓕ marked : 1% 100ppm

7. Set "R1, R2" in accordance with the following table.
   See Fig. 1 below for location of VCF (IC8) rank.

Rank	R1	R2
A	2.2K	470
B	2.0K	430
C	1.8K	390

IC (VCF) illustration



"A" mark indicates the rank of VCF.

8. Difference between MX and MY

MX1～6	NA 80827	OPEN
MY1～6	NA 80774	220 K

MX1

C2

Pin No.	Pin Name	Wire Color	Destination
1	PW		MOX-PWQ (C5-1)
2	FT4		MOX-FT4Q (C5-2)
3	FT1		MOX-FT1Q (C5-3)
4	FT3		MOX-FT3Q (C5-4)
5	FT2		MOX-FT2Q (C5-5)
6	DTN		MOX-DTNQ (C5-6)
7	SIN		MOX-SINQ (C5-7)
8	OMD		MOX-OMDQ (C5-8)
9	+10		MOX-+10 (C5-9)
10	−5		MOX-−5 (C5-10)
11	SQU		MOX-SQUQ (C5-11)
12	SAW		MOX-SAWQ (C5-12)
13	HPF		MOX-HPFQ (C5-13)
14	BPF		MOX-BPFQ (C5-14)
15	WNS		MOX-WNSQ (C5-15)
16	–		–
17	–		–
18	–		–
19	FRQ		MOX-FRQQ (C5-19)
20	FMD		MOX-FMDQ (C5-20)
21	BRI		MOX-BRI (C5-21)
22	RES		MOX-RESQ (C5-22)

C3

Pin No.	Pin Name	Wire Color	Destination
1	EDP		MOX-EDPQ (C6-1)
2	LPF		MOX-LPFQ (C6-2)
3	VOL		MOX-VOLQ (C6-3)
4	INV		MOX-INVQ (C6-4)
5	FA		MOX-FAQ (C6-5)
6	FD		MOX-FDQ (C6-6)
7	FR		MOX-FRQ (C6-7)
8	FS		MOX-FSQ (C6-8)
9	−15		MOX-−15 (C6-9)
10	−15		MOX-−15 (C6-10)
11	GND		MOX-AE (C6-11)
12	GND		MOX-AE (C6-12)
13	GND		MOX-AE (C6-13)
14	+15		MOX-+15 (C6-14)
15	+15		MOX-+15 (C6-15)
16	FXS		MOX-FXSQ (C6-16)
17	AXS		MOX-AXSQ (C6-17)
18	AS		MOX-ASQ (C6-18)
19	AMD		MOXAMDQ (C6-19)
20	AA		MOX-AAQ (C6-20)
21	AD		MOX-ADQ (C6-21)
22	AR		MOX-ARQ (C6-22)

Connector No.		Destination	
MX2	C2	MOX	C7
	C3		C8
MX3	C2		C9
	C3		C10
MX4	C2		C11
	C3		C12
MX5	C2		C13
	C3		C14
MX6	C2		C15
	C3		C16
MY1	C2	MOY	C5
	C3		C6
MY3	C2		C9
	C3		C10
MY4	C2		C11
	C3		C12
MY5	C2		C13
	C3		C14
MY6	C2		C15
	C3		C16

MX1

C1

Pin No.	Pin Name	Wire Color	Destination
1	ATN	BR	DIF-ATNX1 (C4-5)
2	EK	BL	MOX-EK (C3-1)
3	CV	RE	DIF-CV1 (C12-5)
4	TRG	–	–
5	TRG	OR	MY1-TRG (C1-5)
6	RST	–	–
7	RST	YE	MY1-RST (C1-7)

C4

Pin No.	Pin Name	Wire Color	Destination
1	SE	–	–
2	SE	S BR S	–
3	OUT	S BR	LF-X1 (C21-5)

MX2

C1

Pin No.	Pin Name	Wire Color	Destination
1	ATN	RE	DIF-ATNX2 (C4-4)
2	EK	BL	MOX-EK (C3-2)
3	CV	OR	DIF-CV2 (C14-2)
4	TRG	–	–
5	TRG	GR	MY2-TRG (C1-5)
6	RST	–	–
7	RST	BE	MY2-RST (C1-7)

C4

Pin No.	Pin Name	Wire Color	Destination
1	SE	–	–
2	SE	S RE S	–
3	OUT	S RE	LF-X2 (C21-4)

MX3

C1

Pin No.	Pin Name	Wire Color	Destination
1	ATN	OR	DIF-ATNX3 (C4-3)
2	EK	BL	MOX-EK (C3-3)
3	CV	YE	DIF-CV3 (C12-3)
4	TRG	–	–
5	TRG	BE	MY3-TRG (C1-5)
6	RST	–	–
7	RST	VI	MY3-RST (C1-7)

C4

Pin No.	Pin Name	Wire Color	Destination
1	SE	–	–
2	SE	S OR S	–
3	OUT	S OR	LF-X3 (C21-3)

MX4

C1

Pin No.	Pin Name	Wire Color	Destination
1	ATN	YE	DIF-ATNX4 (C4-6)
2	EK	BL	MOX-EK (C3-4)
3	CV	GR	DIF-CV4 (C14-4)
4	TRG	–	–
5	TRG	VI	MY4-TRG (C1-5)
6	RST	–	–
7	RST	GY	MY4-RST (C1-7)

C4

Pin No.	Pin Name	Wire Color	Destination
1	SE	–	–
2	SE	S YE S	–
3	OUT	S YE	LF-X4 (C21-2)

MX5

C1

Pin No.	Pin Name	Wire Color	Destination
1	ATN	GR	DIF-ATNX5 (C4-1)
2	EK	BL	MOX-EK (C3-5)
3	DV	BE	DIF-CV5 (C14-8)
4	TRG	–	–
5	TRG	GY	MY5-TRG (C1-5)
6	RST	–	–
7	RST	WH	MY5-RST (C1-7)

C4

Pin No.	Pin Name	Wire Color	Destination
1	SE	–	–
2	SE	S GR S	–
3	OUT	S GR	LF-X5 (C21-1)

MX6

C1

Pin No.	Pin Name	Wire Color	Destination
1	ATN	BE	DIF-ATNX6 (C4-2)
2	EK	BL	MOX-EK (C3-6)
3	CV	VI	DIF-CV6 (C14-6)
4	TRG	–	–
5	TRG	WH	MY6-TRG (C1-5)
6	RST	–	–
7	RST	SB	MY6-RST (C1-7)

C4

Pin No.	Pin Name	Wire Color	Destination
1	SE	–	–
2	SE	S BE S	–
3	OUT	S BE	LF-X6 (C23-7)

MY1

C1

Pin No.	Pin Name	Wire Color	Destination
1	ATN	VI	DIF-ATNY1 (C19-4)
2	EK	BL	MOY-EK (C3-1)
3	CV	RE	DIF-CV1 (C12-6)
4	TRG	OR	DIF-TRG1 (C10-7)
5	TRG	OR	MX1-TRG (C1-5)
6	RST	YE	DIF-RST1 (C15-2)
7	RST	YE	MX1-RST (C1-7)

C4

Pin No.	Pin Name	Wire Color	Destination
1	SE	–	–
2	SE	S VI S	–
3	OUT	S VI	LF-Y1 (C23-6)

MY2

C1

Pin No.	Pin Name	Wire Color	Destination
1	ATN	GY	DIF-ATNY2 (C19-6)
2	EK	BL	MOY-EK (C3-2)
3	CV	OR	DIF-CV2 (C14-3)
4	TRG	GR	DIF-TRG2 (C8-5)
5	TRG	GR	MX2-TRG (C1-5)
6	RST	BE	DIF-RST2 (C15-4)
7	RST	BE	MX2-RST (C1-7)

C4

Pin No.	Pin Name	Wire Color	Destination
1	SE	–	–
2	SE	S GY S	–
3	OUT	S GY	LF-Y2 (C23-5)

MY3

C1

Pin No.	Pin Name	Wire Color	Destination
1	ATN	WH	DIF-ATNY3 (C19-5)
2	EK	BL	MOY-EK (C3-3)
3	CV	YE	DIF-CV3 (C12-4)
4	TRG	BE	DIF-TRG3 (C10-2)
5	TRG	BE	MX3-TRG (C1-5)
6	RST	VI	DIF-RST3 (C13-5)
7	RST	VI	MX3-RST (C1-7)

C4

Pin No.	Pin Name	Wire Color	Destination
1	SE	–	–
2	SE	S WH S	–
3	OUT	S WH	LF-Y3 (C23-4)

MY4

C1

Pin No.	Pin Name	Wire Color	Destination
1	ATN	SB	DIF-ATNY4 (C19-7)
2	EK	BL	MOY-EK (C3-4)
3	CV	GR	DIF-CV4 (C14-5)
4	TRG	VI	DIF-TRG4 (C8-4)
5	TRG	VI	MX4-TRG (C1-5)
6	RST	GY	DIF-RST4 (C13-7)
7	RST	GY	MX4-RST (C1-7)

C4

Pin No.	Pin Name	Wire Color	Destination
1	SE	–	–
2	SE	S GG S	–
3	OUT	S GG	LF-Y4 (C23-3)

MY5

C1

Pin No.	Pin Name	Wire Color	Destination
1	ATN	GG	DIF-ATNY5 (C19-2)
2	EK	BL	MOY-EK (C3-5)
3	CV	BE	DIF-CV5 (C14-9)
4	TRG	GY	DIF-TRG5 (C10-3)
5	TRG	GY	MX5-TRG (C1-5)
6	RST	WH	DIF-RST5 (C15-6)
7	RST	WH	MX5-RST (C1-7)

C4

Pin No.	Pin Name	Wire Color	Destination
1	SE	–	–
2	SE	S SB S	–
3	OUT	S SB	LF-Y5 (C23-2)

MY6

C1

Pin No.	Pin Name	Wire Color	Destination
1	ATN	PK	DIF-ATNY6 (C19-3)
2	EK	BL	MOY-EK (C3-6)
3	CV	VI	DIF-CV6 (C14-7)
4	TRG	WH	DIF-TRG6 (C10-6)
5	TRG	WH	MX6-TRG (C1-5)
6	RST	SB	DIF-RST6 (C15-8)
7	RST	SB	MX6-RST (C1-7)

C4

Pin No.	Pin Name	Wire Color	Destination
1	SE	–	–
2	SE	S PK S	–
3	OUT	S PK	LF-Y6 (C23-1)

MOX～MOY Circuit Diagram

	ADDRESS NO	CPB PSW	CPB FUNCTION PARAMETERS	DIF	LF
LFO	①	7	SPEED	PLS (C3−2)	PLS (C19−4)
	②	8	EG−DEPTH	EGO (C3−3)	EGD (C19−5)
	③	9	ATTACK−TIME	LAT (C16−3)	LAT (C19−2)
	④	10	DECAY−TIME	LDY (C16−4)	LDY (C19−1)
	⑤	11	MODULATION−DEPTH	PDP (C3−4)	PDP (C15−6)
	⑥～⑧	12	～		
		13	⋀	6 LF1 (C6−6)	LF3 (C15−2)
		16	S/H	7 LF2 (C6−7)	LF2 (C15−3)
		14	GLIDE +	8 LF3 (C7−2)	LF1 (C15−4)
		17	GLIDE −		
	⑨	15	RMO	RMO (C6−4)	CPA−RMO (C9−5)
	⑨	15	RMO	RMO (C6−5)	RMO (C15−1)
	⑩	18	VCO DESTINATION	PLO (C7−5)	PLO (C1−4)
	⑪	19	PW	PLP (C7−3)	PLP (C1−5)
	⑫	20	VCF	PLF (C6−3)	PLF (C1−6)
	⑬	21	VCA	PLA (C6−2)	PLA (C1−7)
	ADD	23	WHEEL	ADD (C7−4)	ADD (C15−5)
	X+Y	22	I+II	X+Y (C6−1)	X+Y (C1−8)

FUNCTION

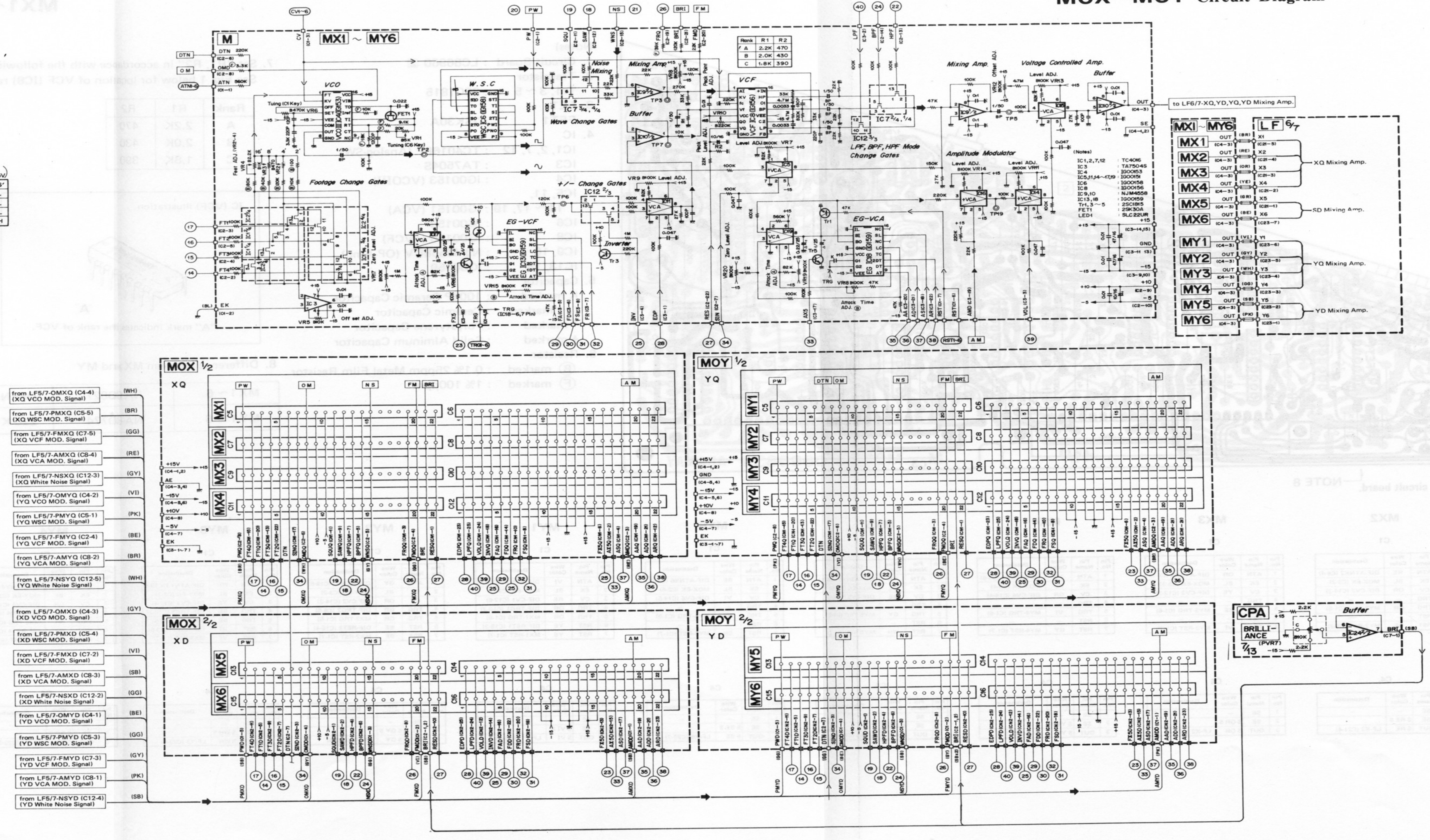
※ LFO WAVE SELECTOR (Logic Level I: +10V O: −5V)

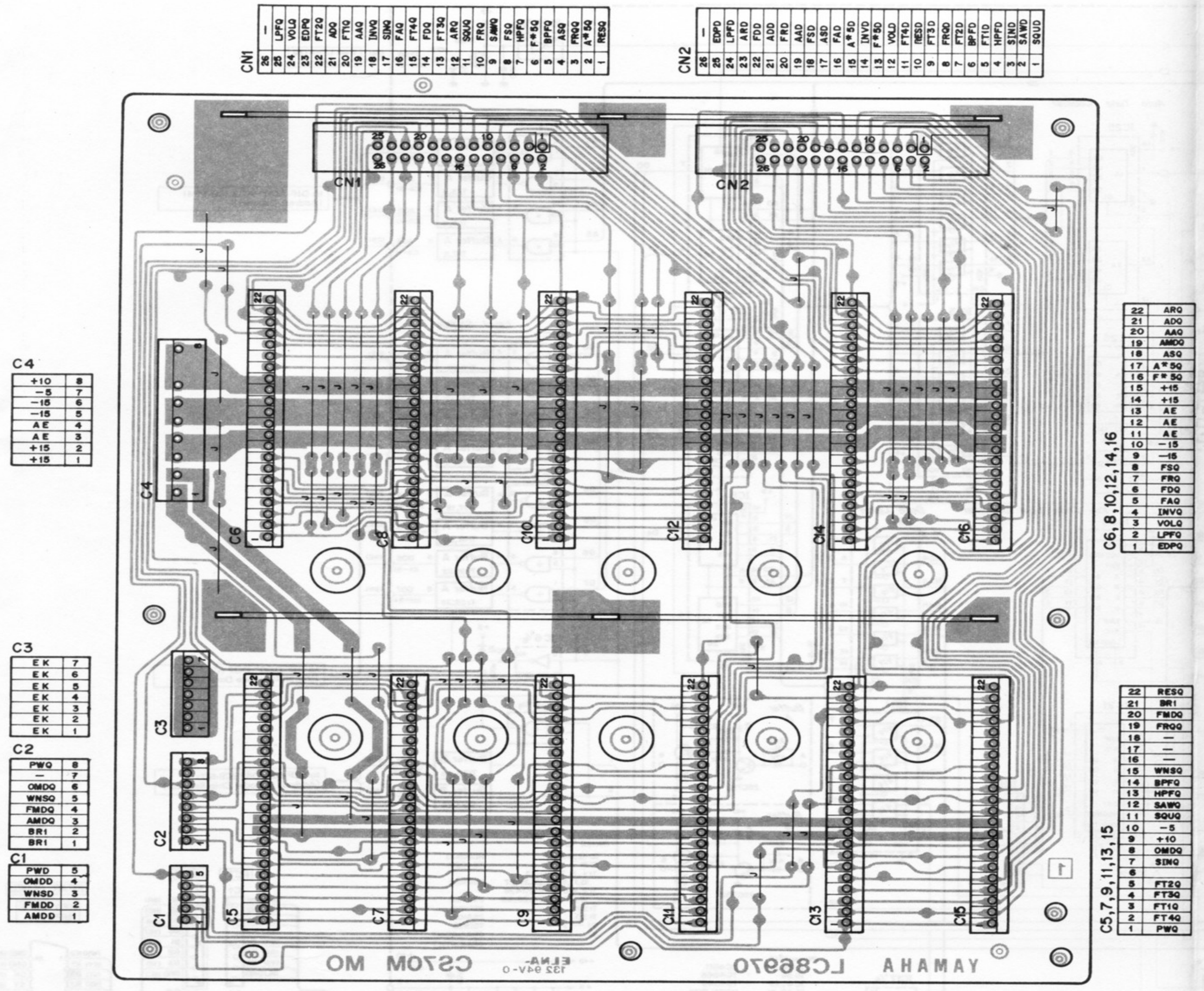
	～	⋀	S/H	G+	G−
LF3	L	L	L	L	H
LF2	L	L	H	H	L
LF1	L	L	L	H	L

FOOTAGE CHANGE (Logic Level I: +10V O: −5V)

	2′	2⅔′	4′	5⅓′	8′	16′
FT1	H	L	L	L	L	L
FT2	L	H	H	L	L	L
FT3	L	H	L	H	H	L
FT4	L	L	L	H	L	H

	ADDRESS NO	CPB PSW NO	CPB FUNCTION PARAMETERS	DIF Name	DIF XQ	DIF XD	DIF YQ	DIF YD	MOX, MOY Name	MOX, MOY XQ YQ	MOX, MOY XD YD	M MX1～MX6 MY1～MY6	
VCO	⑭	66, 67	FEET I (XQ, XD) / FEET II (YQ, YD)	FT1	(CN1−20)	(CN2−5)	(CN3−20)	(CN4−5)	FT1	(CN1−20)	(CN2−5)	FT1	(C2−3)
	⑮			FT2	(CN1−22)	(CN2−7)	(CN3−22)	(CN4−7)	FT2	(CN1−22)	(CN2−7)	FT2	(C2−5)
	⑯			FT3	(CN1−13)	(CN2−9)	(CN3−13)	(CN4−9)	FT3	(CN1−13)	(CN2−9)	FT3	(C2−4)
	⑰			FT4	(CN1−15)	(CN2−11)	(CN3−15)	(CN4−11)	FT4	(CN1−15)	(CN2−11)	FT4	(C2−2)
	⑱	35	⋀	SAW	(CN1−9)	(CN2−2)	(CN3−9)	(CN4−2)	SAW	(CN1−9)	(CN2−2)	SAW	(C2−12)
	⑲	36	⎍	SQU	(CN1−11)	(CN2−1)	(CN3−11)	(CN4−1)	SQU	(CN1−11)	(CN2−1)	SQU	(C2−11)
	⑳	37	PW	P	(C11−5)	(C11−3)	(C11−2)	(C16−2)	PM	(C2−8)	(C1−5)	PW	(C2−1)
	㉑	38	NOISE	NL	(C11−6)	(C11−4)	(C11−1)	(C16−5)	NS	(C2−5)	(C1−3)	WNS	(C2−15)
VCF	㉒	39	HPF	HPF	(CN1−7)	(CN2−4)	(CN3−7)	(CN4−4)	HPF	(CN1−7)	(CN2−4)	HPF	(C2−13)
	㉓	40	TIME x 5	FX5	(CN1−6)	(CN2−13)	(CN3−6)	(CN4−13)	FX5	(CN1−6)	(CN2−13)	FX5	(C3−16)
	㉔	41	BPF	BPF	(CN1−5)	(CN2−6)	(CN3−5)	(CN4−6)	BPF	(CN1−5)	(CN2−6)	BPF	(C2−14)
	㉕	42	⁄	INV	(CN1−18)	(CN2−14)	(CN3−18)	(CN4−14)	INV	(CN1−18)	(CN2−14)	INV	(C3−4)
	㉖	43	CUT OFF FREQ.	FRQ	(CN1−3)	(CN2−8)	(CN3−3)	(CN4−8)	FRQ	(CN1−3)	(CN2−8)	FRQ	(C2−19)
	㉗	44	RESONANCE	RES	(CN1−1)	(CN2−10)	(CN3−1)	(CN4−10)	RES	(CN1−1)	(CN2−10)	RES	(C2−22)
	㉘	45	EG−DEPTH	EDP	(CN1−23)	(CN2−25)	(CN3−23)	(CN4−25)	EDP.	(CN1−23)	(CN2−25)	EDP	(C3−1)
	㉙	46	ATTACK TIME	FA	(CN1−16)	(CN2−16)	(CN3−16)	(CN4−16)	FA	(CN1−16)	(CN2−16)	FA	(C3−5)
	㉚	47	DECAY TIME	FD	(CN1−14)	(CN2−22)	(CN3−14)	(CN4−22)	FD	(CN1−14)	(CN2−22)	FD	(C3−6)
	㉛	48	SUSTAIN LEVEL	FS	(CN1−8)	(CN2−18)	(CN3−8)	(CN4−18)	FS	(CN1−8)	(CN2−18)	FS	(C3−8)
	㉜	49	RELEASE TIME	FR	(CN1−10)	(CN2−20)	(CN3−10)	(CN4−20)	FR	(CN1−10)	(CN2−20)	FR	(C3−7)
VCA	㉝	50	TIME X5	AX5	(CN1−2)	(CN2−15)	(CN3−2)	(CN4−15)	AX5	(CN1−10)	(CN2−15)	AX5	(C3−17)
	㉞	52	～	SIN	(CN1−17)	(CN2−3)	(CN3−17)	(CN4−3)	SIN	(CN1−17)	(CN2−3)	NIS	(C2−7)
	㉟	53	ATTACK TIME	AA	(CN1−19)	(CN2−19)	(CN3−19)	(CN4−19)	AA	(CN1−19)	(CN2−19)	AA	(C3−20)
	㊱	54	DECAY TIME	AD	(CN1−21)	(CN2−21)	(CN3−21)	(CN4−21)	AD	(CN1−21)	(CN2−21)	AD	(C3−21)
	㊲	55	SUSTAIN LEVEL	AS	(CN1−4)	(CN2−17)	(CN3−4)	(CN4−17)	AS	(CN1−4)	(CN2−17)	AS	(C3−18)
	㊳	56	RELEASE TIME	AR	(CN1−12)	(CN2−23)	(CN3−12)	(CN4−23)	AR	(CN1−12)	(CN2−23)	AR	(C3−22)
	㊴	57	VOLUME	VOL	(CN1−24)	(CN2−12)	(CN3−24)	(CN4−12)	VOL	(CN1−24)	(CN2−12)	VOL	(C3−3)
※ VCF	㊵		LPF (BPF, HPF OFF)	LPF	(CN1−25)	(CN2−24)	(CN3−25)	(CN4−24)	LPF	(CN1−25)	(CN2−24)	LPF	(C3−2)





View from the component side of the circuit board.

Note)
1. Circuit Board : LC86970 [1]

MOX~MOY Circuit Board & Wiring

MOX

C1

Pin No.	Pin Name	Wire Color	Destination
1	AMDD	SB	LF-AMXD (C8-3)
2	FMDD	VI	LF-FMXD (C7-2)
3	WNSD	GG	LF-NSXD (C12-2)
4	OMDD	GY	LF-OMXD (C4-3)
5	PWD	SB	LF-PMXD (C5-4)

C2

Pin No.	Pin Name	Wire Color	Destination
1	BRI	–	–
2	BRI	SB	MOY-BRI (C2-2)
3	AMDQ	RE	LF-AMXQ (C8-4)
4	FMDQ	GG	LF-FMXQ (C7-5)
5	WNSQ	GY	LF-NSXQ (C12-3)
6	OMDQ	GY	LF-OMXQ (C4-4)
7	–	–	–
8	PWQ	BR	LF-PMXQ (C5-5)

C3

Pin No.	Pin Name	Wire Color	Destination
1	EK	BL	MX1-EX (C1-2)
2	EK	BL	MX2-EK (C1-2)
3	EK	BL	MX3-EK (C1-2)
4	EK	BL	MX4-EK (C1-2)
5	EK	BL	MX5-EK (C1-2)
6	EK	BL	MX6-EK (C1-2)
7	EK	BL	DIF-EK (C14-1)

C4

Pin No.	Pin Name	Wire Color	Destination
1	+15	BR	DC-+15 (C7-5)
2	+15	BR	DC-+15 (C6-7)
3	AE	BL	DC-AE (C6-2)
4	AE	BL	DC-AE (C6-3)
5	–15	YE	DC- –15 (C7-7)
6	–15	YE	DC- –15 (C6-8)
7	–5	BE	DC- –5 (C6-6)
8	+10	GR	DC-+10 (C6-5)

CN1

Pin No.	Pin Name	Destination
1	RESQ	DIF-RESXQ (CN1-1)
2	A*5Q	DIF-A*5XQ (CN1-2)
3	FRQQ	DIF-FRQXQ (CN1-3)
4	ASQ	DIF-ASXQ (CN1-4)
5	BPFQ	DIF-BPFXQ (CN1-5)
6	F*5Q	DIF-F*5XQ (CN1-6)
7	HPFQ	DIF-HPFXQ (CN1-7)
8	FSQ	DIF-FSXQ (CN1-8)
9	SAWQ	DIF-SAWXQ (CN1-9)
10	FRQ	DIF-FRXQ (CN1-10)
11	SQUQ	DIF-SQUXQ (CN1-11)
12	ARQ	DIF-ARXQ (CN1-12)
13	FT3Q	DIF-FT3XQ (CN1-13)
14	FDQ	DIF-FDXQ (CN1-14)
15	FT4Q	DIF-FT4XQ (CN1-15)
16	FAQ	DIF-FAXQ (CN1-16)
17	SINQ	DIF-SINXQ (CN1-17)
18	INVQ	DIF-INVXQ (CN1-18)
19	AAQ	DIF-AAXQ (CN1-19)
20	FT1Q	DIF-FT1XQ (CN1-20)
21	ADQ	DIF-ADXQ (CN1-21)
22	FT2Q	DIF-FT2XQ (CN1-22)
23	EDPQ	DIF-EDPXQ (CN1-23)
24	VOLQ	DIF-VOLXQ (CN1-24)
25	LPFQ	DIF-LPFXQ (CN1-25)
26	–	–

CN2

Pin No.	Pin Name	Destination
1	SQUD	DIF-SQUXD (CN2-1)
2	SAWD	DIF-SAWXD (CN2-2)
3	SIND	DIF-SINXD (CN2-3)
4	HPFD	DIF-HPFXD (CN2-4)
5	FT1D	DIF-FT1XD (CN2-5)
6	BPFD	DIF-BPFXD (CN2-6)
7	FT2D	DIF-FT2XD (CN2-7)
8	FRQD	DIF-FRQXD (CN2-8)
9	FT3D	DIF-FT3XD (CN2-9)
10	RESD	DIF-RESXD (CN2-10)
11	FT4D	DIF-FT4XD (CN2-11)
12	VOLD	DIF-VOLXD (CN2-12)
13	F*5D	DIF-F*5XD (CN2-13)
14	INVD	DIF-INVXD (CN2-14)
15	A*5D	DIF-A*5XD (CN2-15)
16	FAD	DIF-FAXD (CN2-16)
17	ASD	DIF-ASXD (CN2-17)
18	FSD	DIF-FSXD (CN2-18)
19	AAD	DIF-AAXD (CN2-19)
20	FRD	DIF-FRXD (CN2-20)
21	ADD	DIF-ADXD (CN2-21)
22	FDD	DIF-FDXD (CN2-22)
23	ARD	DIF-ARXD (CN2-23)
24	LPFD	DIF-LPFXD (CN2-24)
25	EDPD	DIF-EDPXD (CN2-25)
26	–	–

MOY

C1

Pin No.	Pin Name	Wire Color	Destination
1	AMDD	PK	LF-AMYD (C8-1)
2	FMDD	GY	LF-FMYD (C7-3)
3	WNSD	SB	LF-NSYD (C12-4)
4	OMDD	BE	LF-OMYD (C4-1)
5	PWD	GG	LF-PMYD (C5-3)

C2

Pin No.	Pin Name	Wire Color	Destination
1	BRI	SB	CPA-BRI (C7-1)
2	BRI	SB	MOX-BRI (C2-2)
3	AMDQ	BR	LF-AMYQ (C8-2)
4	FMDQ	BE	LF-FMYQ (C7-1)
5	WNSQ	WH	LF-NSYQ (C12-5)
6	OMDQ	VI	LF-OMYQ (C4-2)
7	DTN	GG	CPA-DET (C4-1)
8	PWQ	PK	LF-PMYQ (C5-1)

C3

Pin No.	Pin Name	Wire Color	Destination
1	EK	BL	MY1-EK (C1-2)
2	EK	BL	MY2-EK (C1-2)
3	EK	BL	MY3-EK (C1-2)
4	EK	BL	MY4-EK (C1-2)
5	EK	BL	MY5-EK (C1-2)
6	EK	BL	MY6-EK (C1-2)
7	EK	BL	DIF-EK (C14-10)

C4

Pin No.	Pin Name	Wire Color	Destination
1	+15	BR	DC-+15 (C7-4)
2	+15	BR	DC-+15 (C5-7)
3	AE	BL	DC-AE (C5-2)
4	AE	BL	DC-AE (C5-3)
5	–15	YE	DC- –15 (C7-6)
6	–15	YE	DC- –15 (C5-8)
7	–5	BE	DC- –5 (C5-6)
8	+10	GR	DC-+10 (C5-5)

CN1

Pin No.	Pin Name	Destination
1	RESQ	DIF-RESYQ (CN3-1)
2	A*5Q	DIF-A*SYQ (CN3-2)
3	FRQQ	DIF-FRQYQ (CN3-3)
4	ASQ	DIF-ASYQ (CN3-4)
5	BPFQ	DIF-BPFYQ (CN3-5)
6	F*5Q	DIF-F*5YQ (CN3-6)
7	HPFQ	DIF-HPFYQ (CN3-7)
8	FSQ	DIF-FSYQ (CN3-8)
9	SAWQ	DIF-SAWYQ (CN3-9)
10	FRQ	DIF-FRYQ (CN3-10)
11	SQUQ	DIF-SQUYQ (CN3-11)
12	ARQ	DIF-ARYQ (CN3-12)
13	FT3Q	DIF-FT3YQ (CN3-13)
14	FDQ	DIF-FDYQ (CN3-14)
15	FT4Q	DIF-FT4YQ (CN3-15)
16	FAQ	DIF-FAYQ (CN3-16)
17	SINQ	DIF-SINYQ (CN3-17)
18	INVQ	DIF-INVYQ (CN3-18)
19	AAQ	DIF-AAYQ (CN3-19)
20	FT1Q	DIF-FT1YQ (CN3-20)
21	ADQ	DIF-ADYQ (CN3-21)
22	FT2Q	DIF-FT2YQ (CN3-22)
23	EDPQ	DIF-EDPYQ (CN3-23)
24	VOLQ	DIF-VOLYQ (CN3-24)
25	LPFQ	DIF-LPFYQ (CN3-25)
26	–	–

CN2

Pin No.	Pin Name	Destination
1	SQUD	DIF-SQUYD (CN4-1)
2	SAWD	DIF-SAWYD (CN4-2)
3	SIND	DIF-SINYD (CN4-3)
4	HPFD	DIF-HPFYD (CN4-4)
5	FT1D	DIF-FT1YD (CN4-5)
6	BPFD	DIF-BPFYD (CN4-6)
7	FT2D	DIF-FT2YD (CN4-7)
8	FRQD	DIF-FRQYD (CN4-8)
9	FT3D	DIF-FT3YD (CN4-9)
10	RESD	DIF-RESYD (CN4-10)
11	FT4D	DIF-FT4YD (CN4-11)
12	VOLD	DIF-VOLYD (CN4-12)
13	F*5D	DIF-F*5YD (CN4-13)
14	INVD	DIF-INVYD (CN4-14)
15	A*5D	DIF-A*5YD (CN4-15)
16	FAD	DIF-FAYD (CN4-16)
17	ASD	DIF-ASYD (CN4-17)
18	FSD	DIF-FSYD (CN4-18)
19	AAD	DIF-AAYD (CN4-19)
20	FRD	DIF-FRYD (CN4-20)
21	ADD	DIF-ADYD (CN4-21)
22	FDD	DIF-FDYD (CN4-22)
23	ARD	DIF-ARYD (CN4-23)
24	LPFD	DIF-LPFYD (CN4-24)
25	EDPD	DIF-EDPYD (CN4-25)
26	–	–

MOX

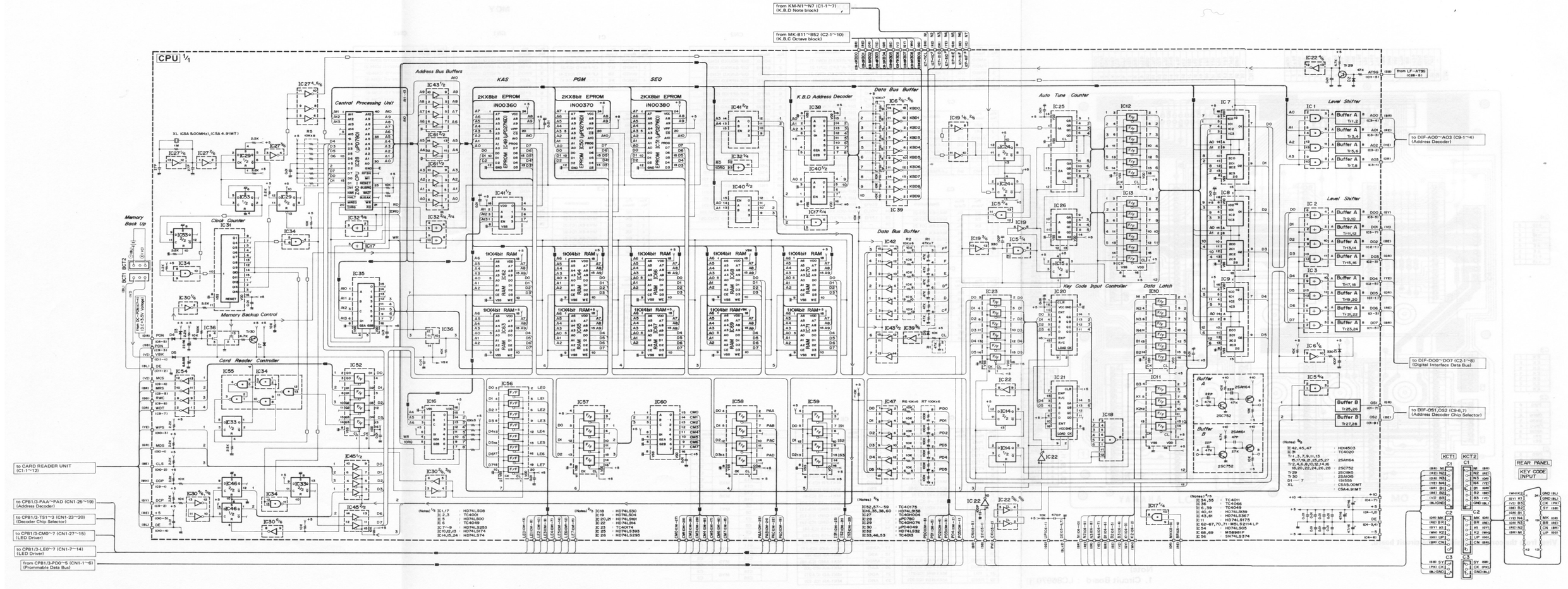
C5

Pin No.	Pin Name	Wire Color	Destination
1	PWQ		MX1-PW (C2-1)
2	FT4Q		MX1-FT4 (C2-2)
3	FT1Q		MX1-FT1 (C2-3)
4	FT3Q		MX1-FT3 (C2-4)
5	FT2Q		MX1-FT2 (C2-5)
6	–	–	–
7	SINQ		MX1-SIN (C2-7)
8	OMDQ		MX1-OMD (C2-8)
9	+10		MX1-+10 (C2-9)
10	–5		MX1- –5 (C2-10)
11	SQUQ		MX1-SQU (C2-11)
12	SAWQ		MX1-SAW (C2-12)
13	HPFQ		MX1-HPF (C2-13)
14	BPFQ		MX1-BPF (C2-14)
15	WNSQ		MX1-WNS (C2-15)
16	–		–
17	–		–
18	–		–
19	FRQQ		MX1-FRQ (C2-19)
20	FMDQ		MX1-FMD (C2-20)
21	BRI		MX1-BRI (C2-21)
22	RESQ		MX1-RES (C2-22)

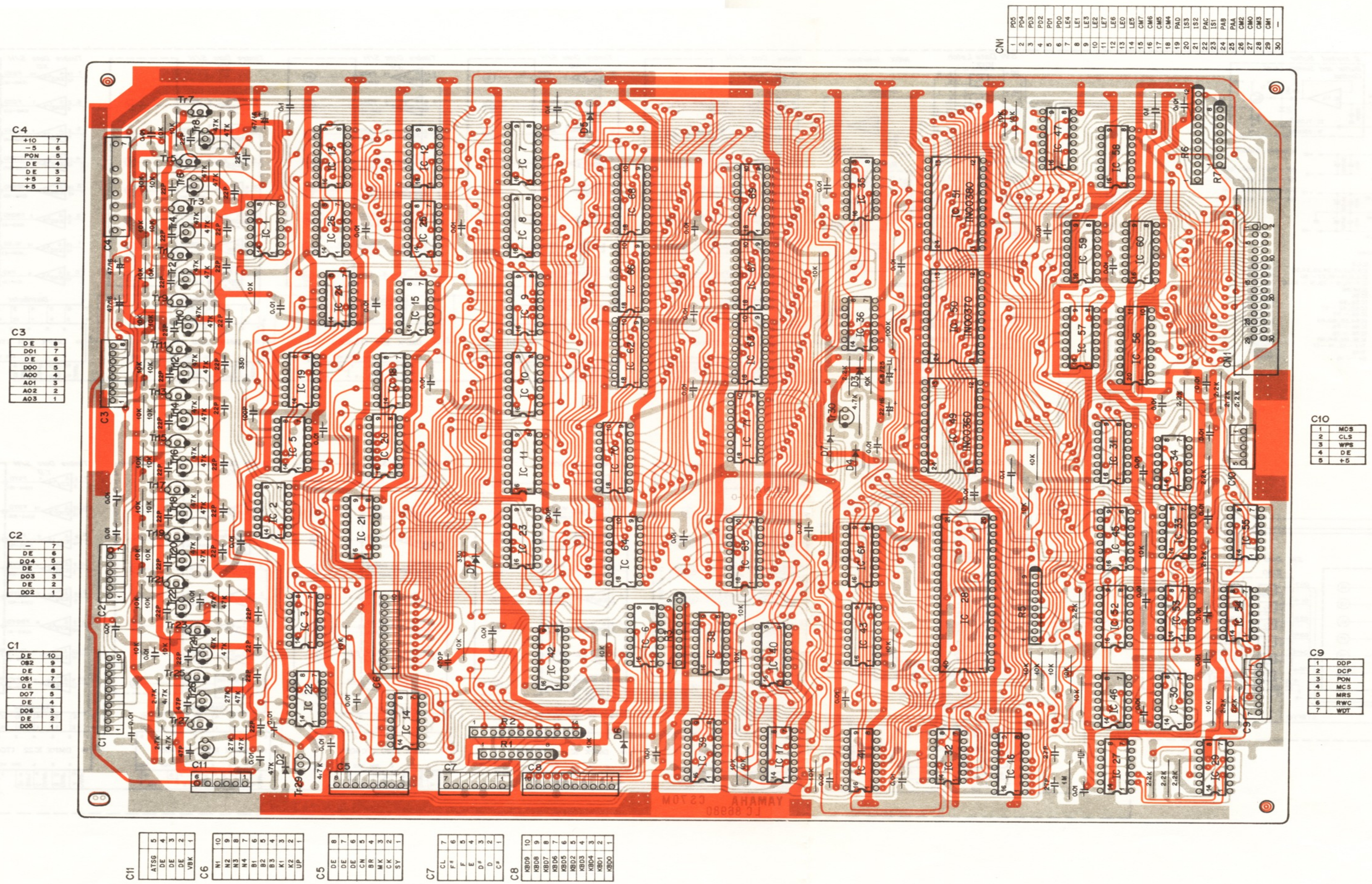
C6

Pin No.	Pin Name	Wire Color	Destination
1	EDPQ		MX1-EDP (C3-1)
2	LPFQ		MX1-LPF (C3-2)
3	VOLQ		MX1-VOL (C3-3)
4	INVQ		MX1-INV (C3-4)
5	FAQ		MX1-FA (C3-5)
6	FDQ		MX1-FD (C3-6)
7	FRQ		MX1-FR (C3-7)
8	FSQ		MX1-FS (C3-8)
9	–15		MX1- –15 (C3-9)
10	–15		MX1- –15 (C3-10)
11	AE		MX1-GND (C3-11)
12	AE		MX1-GND (C3-12)
13	AE		MX1-GND (C3-13)
14	+15		MX1-+15 (C3-14)
15	+15		MX1-+15 (C3-15)
16	FX5Q		MX1-FX5 (C3-16)
17	AX5Q		MX1-AX5 (C3-17)
18	ASQ		MX1-AS (C3-18)
19	AMDQ		MX1-AMD (C3-19)
20	AAQ		MX1-AA (C3-20)
21	ADQ		MX1-AD (C3-21)
22	ARQ		MX1-AR (C3-22)

Connector No.		Destination	
MOX	C7	MX2	C2
	C8		C3
	C9	MX3	C2
	C10		C3
	C11	MX4	C2
	C12		C3
	C13	MX5	C2
	C14		C3
	C15	MX6	C2
	C16		C3
MOY	C5	MY1	C2
	C6		C3
	C7	MY2	C2
	C8		C3
	C9	MY3	C2
	C10		C3
	C11	MY4	C2
	C12		C3
	C13	MY5	C2
	C14		C3
	C15	MY6	C2
	C16		C3


CPU 1/1
Control Processing Unit
Address Bus Buffers
KAS
PGM
SEQ
2KX8bit EPROM
IN00360
IN00370
IN00380
K.B.D Address Decoder
Data Bus Buffer
Auto Tune Counter
Level Shifter
Clock Counter
Memory Back Up
Memory Backup Control
Card Reader Controller
Key Code Input Controller
Data Latch
1KX4bit RAM
from KM-N1~N7 (C1-1~7) (K.B.D Note block)
from MK-B11~B52 (C2-1~10) (K.B.C Octave block)
from LF-ATSG (C28-5)
to DIF-A00~A03 (C9-1~4) (Address Decoder)
to DIF-D00~D07 (C2-1~8) (Digital Interface Data Bus)
to DIF-OS1,OS2 (C9-6,7) (Address Decoder Chip Selector)
to CARD READER UNIT (C1-1~12)
to CPB1/3-PAA~PAD (CN1-25~19) (Address Decoder)
to CPB1/3-TS1~3 (CN1-23~20) (Decoder Chip Selector)
to CPB1/3-CM0~7 (CN1-27~15) (LED Driver)
to CPB1/3-LE0~7 (CN1-7~14) (LED Driver)
from CPB1/3-PD0~5 (CN1-1~6) (Prommable Data Bus)
REAR PANEL
KEY CODE INPUT
KCT1
KCT2

CPU Circuit Board & Wiring



View from the component side of the circuit board.

C1

Pin No.	Pin Name	Wire Color	Destination
1	DO5	OR	DIF-DO5 (C2-3)
2	DE	–	–
3	DO6	RE	DIF-DO6 (C2-2)
4	DE	–	–
5	DO7	BR	DIF-DO7 (C2-1)
6	DE	–	–
7	OS1	GR	DIF-OS1 (C9-6)
8	DE	–	–
9	OS2	BE	DIF-OS2 (C9-7)
10	DE	–	–

C2

Pin No.	Pin Name	Wire Color	Destination
1	DO2	BE	DIF-DO2 (C2-6)
2	DE	–	–
3	DO3	GR	DIF-DO3 (C2-5)
4	DE	–	–
5	DO4	YE	DIF-DO4 (C2-4)
6	DE	–	–
7	–	–	–

C3

Pin No.	Pin Name	Wire Color	Destination
1	AO3	OR	DIF-AO3 (C9-3)
2	AO2	YE	DIF-AO2 (C9-4)
3	AO1	RE	DIF-AO1 (C9-2)
4	AO0	BR	DIF-AO0 (C9-1)
5	DO0	GY	DIF-DO0 (C2-8)
6	DE	–	–
7	DO1	VI	DIF-DO1 (C2-7)
8	DE	–	–

C4

Pin No.	Pin Name	Wire Color	Destination
1	+5	RE	DC-+5 (C5-4)
2	+5	RE	DC-+5 (C6-4)
3	DE	BL	DC-DE (C5-1)
4	DE	BL	DC-DE (C6-1)
5	PON	OR	DC-PON (C7-1)
6	–5	BE	DC- –5 (C7-3)
7	+10	GR	DC-+10 (C7-2)

C5

Pin No.	Pin Name	Wire Color	Destination
1	SY	SB	KCT1-SY (C3-1)
2	CK	PK	KCT1-CK (C3-2)
3	MK	OR	KCT1-MK (C2-1)
4	BR	RE	KCT1-BR (C2-2)
5	CN	BR	KCT1-CN (C2-6)
6	DE	BL	KCT1-GND (C3-3)
7	DE	BL	KCT1-GND (C1-8)
8	DE	–	–

C6

Pin No.	Pin Name	Wire Color	Destination
1	UP	GG	KCT1-UP (C2-5)
2	K2	WH	KCT1-K2 (C2-4)
3	K1	GY	KCT1-K1 (C2-3)
4	B3	VI	KCT1-B3 (C1-7)
5	B2	BE	KCT1-B2 (C1-6)
6	B1	GR	KCT1-B1 (C1-5)
7	N4	YE	KCT1-N4 (C1-4)
8	N3	OR	KCT1-N3 (C1-3)
9	N2	RE	KCT1-N2 (C1-2)
10	N1	BR	KCT1-N1 (C1-1)

C7

Pin No.	Pin Name	Wire Color	Destination
1	C#	RE	MK-N2 (C1-2)
2	D	OR	MK-N3 (C1-3)
3	D#	YE	MK-N4 (C1-4)
4	E	GR	MK-N5 (C1-5)
5	F	BE	MK-N6 (C1-6)
6	F#	VI	MK-N7 (C1-7)
7	CL	BR	MK-N1 (C1-1)

C8

Pin No.	Pin Name	Wire Color	Destination
1	KBD0	BR	MK-B11 (C2-1)
2	KBD1	RE	MK-B12 (C2-2)
3	KBD4	GR	MK-B31 (C2-5)
4	KBD3	YE	MK-B22 (C2-4)
5	KBD2	OR	MK-B21 (C2-3)
6	KBD5	BE	MK-B32 (C2-6)
7	KBD6	VI	MK-B41 (C2-7)
8	KBD7	GY	MK-B42 (C2-8)
9	KBD8	WH	MK-B51 (C2-9)
10	KBD9	GG	MK-B52 (C2-10)

C9

Pin No.	Pin Name	Wire Color	Destination
1	DDP	WH	CR-DDP (C1-10)
2	DCP	GY	CR-DCP (C1-9)
3	PON	SB	CR-PON (C1-2)
4	MCS	VI	CR-MCS (C1-8)
5	MRS	BR	CR-MRS (C1-1)
6	RWC	GG	CR-RWC (C1-3)
7	WDT	OR	CR-WDT (C1-4)

C10

Pin No.	Pin Name	Wire Color	Destination
1	MDS	GR	CR-MDS (C1-6)
2	CLS	BE	CR-CLS (C1-7)
3	WPS	YE	CR-WPS (C1-5)
4	DE	BL	CR-DE (C1-12)
5	+5	RE	CR-+5 (C1-11)

C11

Pin No.	Pin Name	Wire Color	Destination
1	VBK	VI	BCT1-VBK (C1-1)
2	DE	BL	BCT1-DE (C1-3)
3	DE	–	–
4	DE	–	–
5	ATSG	S SB	LF-ATSG (C26-5)

CN1

Pin No.	Pin Name	Wire Color	Destination
1	PD5		CPB-PD5 (CN1-1)
2	PD4		CPB-PD4 (CN1-2)
3	PD3		CPB-PD3 (CN1-3)
4	PD2		CPB-PD2 (CN1-4)
5	PD1		CPB-PD1 (CN1-5)
6	PD0		CPB-PD0 (CN1-6)
7	LE4		CPB-LE4 (CN1-7)
8	LE1		CPB-LE1 (CN1-8)
9	LE3		CPB-LE3 (CN1-9)
10	LE2		CPB-LE2 (CN1-10)
11	LE7		CPB-LE7 (CN1-11)
12	LE6		CPB-LE6 (CN1-12)
13	LE0		CPB-LE0 (CN1-13)
14	LE5		CPB-LE5 (CN1-14)
15	CM7		CPB-CM7 (CN1-15)
16	CM6		CPB-CM6 (CN1-16)
17	CM5		CPB-CM5 (CN1-17)
18	CM4		CPB-CM4 (CN1-18)
19	PAD		CPB-PAD (CN1-19)
20	IS3		CPB-IS3 (CN1-20)
21	IS2		CPB-IS2 (CN1-21)
22	PAC		CPB-PAC (CN1-22)
23	IS1		CPB-IS1 (CN1-23)
24	PAB		CPB-PAB (CN1-24)
25	PAA		CPB-PAA (CN1-25)
26	CM2		CPB-CM2 (CN1-26)
27	CM0		CPB-CM0 (CN1-27)
28	CM3		CPB-CM3 (CN1-28)
29	CM1		CPB-CM1 (CN1-29)
30	–		–

KCT1

C1

Pin No.	Pin Name	Wire Color	Destination
1	N1	BR	CPU-N1 (C6-10)
2	N2	RE	CPU-N2 (C6-9)
3	N3	OR	CPU-N3 (C6-8)
4	N4	YE	CPU-N4 (C6-7)
5	B1	GR	CPU-B1 (C6-6)
6	B2	BE	CPU-B2 (C6-5)
7	B3	VI	CPU-B3 (C6-4)
8	GND	BL	CPU-DE (C5-7)

C2

Pin No.	Pin Name	Wire Color	Destination
1	MK	OR	CPU-MK (C5-3)
2	BR	RE	CPU-BR (C5-4)
3	K1	GY	CPU-K1 (C6-3)
4	K2	WH	CPU-K2 (C6-2)
5	UP	GG	CPU-UP (C6-1)
6	CN	BR	CPU-CN (B5-5)
7	–	–	–

C3

Pin No.	Pin Name	Wire Color	Destination
1	SY	SB	CPU-SY (C5-1)
2	CK	PK	CPU-CK (C5-2)
3	GND	BL	CPU-DE (C5-6)

KCT2

C1

Pin No.	Pin Name	Wire Color	Destination
1	N1	BR	KCI-N1 (CN1-9)
2	N2	RE	KCI-N2 (CN1-8)
3	N3	OR	KCI-N3 (CN1-7)
4	N4	YE	KCI-N4 (CN1-6)
5	B1	GR	KCI-B1 (CN1-5)
6	B2	BE	KCI-B2 (CN1-4)
7	B3	VI	KCI-B3 (CN1-3)
8	GND	BL	KCI-GND (CN1-23)

C2

Pin No.	Pin Name	Wire Color	Destination
1	MK	OR	KCI-MK (CN1-19)
2	BR	RE	KCI-BR (CN1-18)
3	K1	GY	KCI-K1 (CN1-2)
4	K2	WH	KCI-K2 (CN1-1)
5	UP	GG	KCI-UP (CN1-16)
6	CN	BR	KCI-CN (CN1-17)
7	–	–	–

C3

Pin No.	Pin Name	Wire Color	Destination
1	SY	SB	KCI-SY (CN1-21)
2	CK	PK	KCI-CK (CN1-22)
3	GND	BL	KCI-GND (CN1-24)

KCI

CN1

Pin No.	Pin Name	Wire Color	Destination
1	K2	WH	KCT2-K2 (C2-4)
2	K1	GY	KCT2-K1 (C2-3)
3	B3	VI	KCT2-B3 (C1-7)
4	B2	BE	KCT2-B2 (C1-6)
5	B1	GR	KCT2-B1 (C1-5)
6	N4	YE	KCT2-N4 (C1-4)
7	N3	OR	KCT2-N3 (C1-3)
8	N2	RE	KCT2-N2 (C1-2)
9	N1	BR	KCT2-N1 (C1-1)
10	–	–	–
11	–	–	–
12	–	–	–
13	–	–	–
14	–	–	–
15	–	–	–
16	UP	GG	KCT2-UP (C2-5)
17	CN	BR	KCT2-CN (C2-6)
18	BR	RE	KCT2-BR (C2-2)
19	MK	OR	KCT2-MK (C2-1)
20	–	–	–
21	SY	SB	KCT2-SY (C3-1)
22	CK	PK	KCT2-CK (C3-2)
23	GND	BL	KCT2-GND (C1-8)
24	GND	BL	KCT2-GND (C3-3)

C1

Pin No.	Pin Name	Wire Color	Destination
1	VBK	VI	CPU-VBK (C11-1)
2	–	–	–
3	DE	BL	CPU-DE (C11-2)

Plug Housing

C1

Pin No.	Pin Name	Wire Color	Destination
1	VBK	VI	BAT-VBK (+)
2	–	–	–
3	DE	BL	BAT-DE (–)

Receptacle Housing

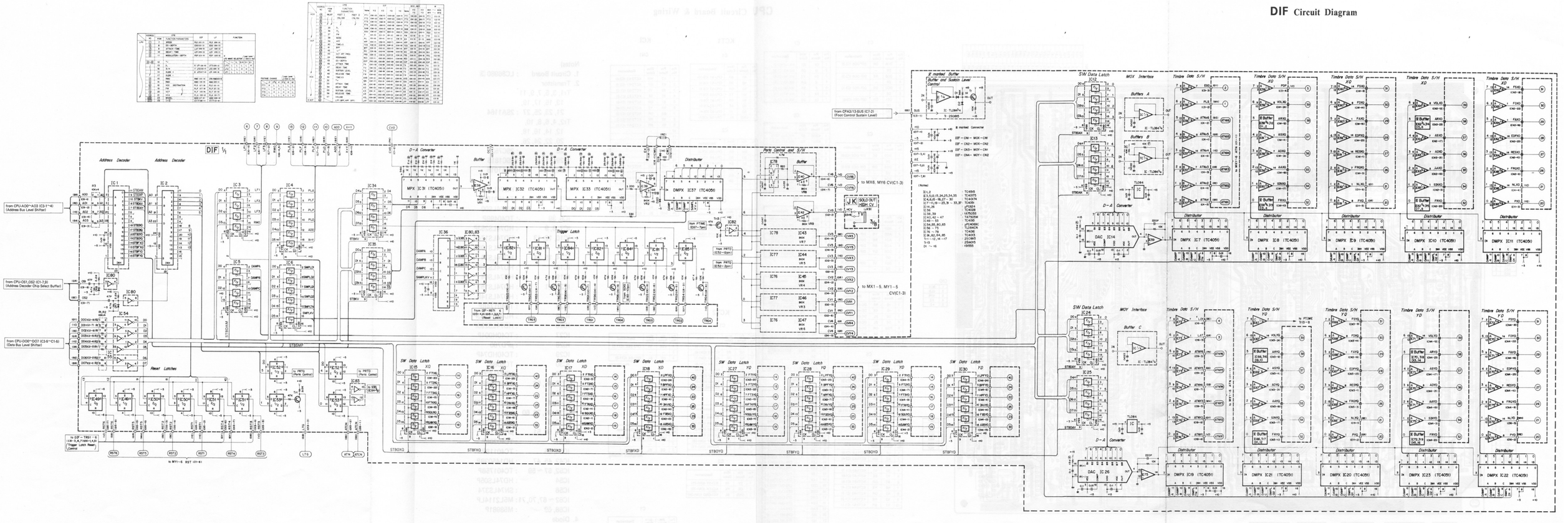
C1

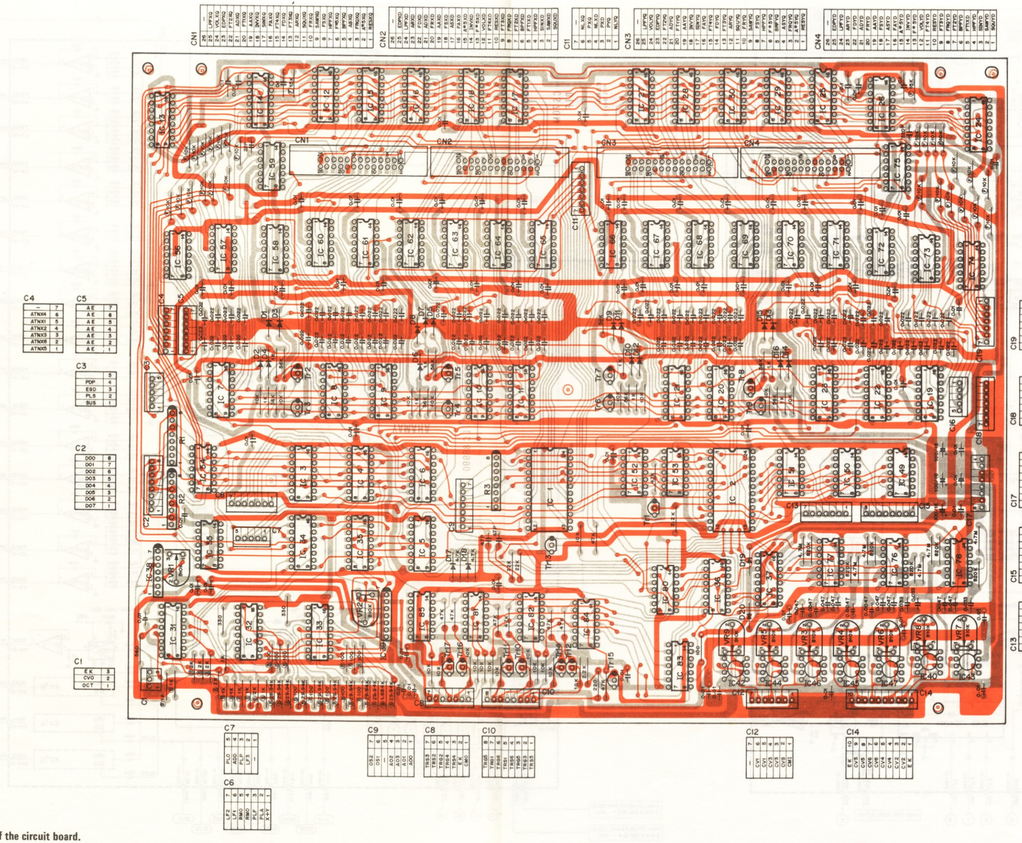
Pin No.	Pin Name	Wire Color	Destination
+	VBK	VI	BCT2-VBK (C1-1)
–	DE	BL	BCT2-DE (C1-3)

Notes)

1. Circuit Board : LC86980 ③
2. Transistor
   - Tr1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27 : 2SA1164
   - Tr2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28 : 2SC752
   - Tr29 : 2SC1815
   - Tr30 : 2SA1015
3. IC
   - IC1, 17 : HD74LS08
   - IC2, 3 : TC4001BP
   - IC5 : HD74LS00
   - IC6, 39 : TC4049BP
   - IC7, 8, 9 : HD74LS253P
   - IC10, 12, 13 : HD74LS174P
   - IC11 : HD74LS195P
   - IC14, 15, 24 : HD74LS74
   - IC18 : HD74LS30P
   - IC19 : HD74LS04
   - IC20, 21 : HD74LS161
   - IC22 : HD74LS14P
   - IC23 : TC40174BP
   - IC25 : HD74LS393P
   - IC26 : HD74LS295P
   - IC27 : TC40H004P
   - IC28 : μPD780
   - IC29 : TC40HD74P
   - IC30 : TC4069C
   - IC32 : HD74LS32P
   - IC33, 46, 53 : TC4013BP
   - IC36 : TC4066BP
   - IC40, 41 : HD74LS139P
   - IC16, 35, 38, 60 : HD74LS138
   - IC43, 61 : HD74LS367P
   - IC49, 50, 51 : μPC2716D
   - IC31 : TC4020BP
   - IC34, 35 : TC4011BP
   - IC42, 45, 47 : HD14503BP
   - IC52, 57 ~ 59 : TC40175BP
   - IC54 : HD74LS05P
   - IC56 : SN74LS374
   - IC62 ~ 67, 70, 71 : M5L2114LP
   - IC68, 69 : M58981P
4. Diode
   - D1 ~ 7 : 1S1555
5. Capacitor
   - ( ) marked : Ceramic Capacitor

DIF Circuit Diagram





View from the component side of the circuit board.

KEP-NA80776-14 ⚠

DIF Circuit Board & Wiring

C1

Pin No.	Pin Name	Wire Color	Destination
1	OCT	–	–
2	CVO	PK	CPA-CVO (IC4-3)
3	EK	BL	CPA-EK2 (IC4-5)

C2

Pin No.	Pin Name	Wire Color	Destination
1	DO7	BR	CPU-DO7 (IC1-5)
2	DO6	RE	CPU-DO6 (IC1-3)
3	DO5	OR	CPU-DO5 (IC1-1)
4	DO4	YE	CPU-DO4 (IC2-5)
5	DO3	GR	CPU-DO3 (IC2-3)
6	DO2	BE	CPU-DO2 (IC2-1)
7	DO1	VI	CPU-DO1 (IC3-7)
8	DO0	GY	CPU-DO0 (IC3-5)

C3

Pin No.	Pin Name	Wire Color	Destination
1	SUS	GG	CPA-SUS (IC7-2)
2	PLS	WH	LF-PLS (IC19-6)
3	EGO	GY	LF-EGO (IC19-5)
4	PDF	VI	LF-PDF (C15-6)
5	–	–	–

C4

Pin No.	Pin Name	Wire Color	Destination
1	ATNX5	GR	MX5-ATN (IC1-1)
2	ATNX6	BE	MX6-ATN (IC1-1)
3	ATNX3	OR	MX3-ATN (IC1-1)
4	ATNX2	RE	MX2-ATN (IC1-1)
5	ATNX1	BR	MX1-ATN (IC1-1)
6	ATNX4	YE	MX4-ATN (IC1-1)
7	–	–	–

C5

Pin No.	Pin Name	Wire Color	Destination
1	AE		
2	AE		
3	AE		
4	AE		
5	AE		
6	AE		
7	AE		

C6

Pin No.	Pin Name	Wire Color	Destination
1	X+Y	GR	LF-X + Y (IC1-8)
2	PLA	YE	LF-PLA (C1-7)
3	PLF	OR	LF-PLF (IC1-6)
4	RMO	BR	CPA-RMO (C9-5)
5	RMO	BR	LF-RMO (C15-1)
6	LF1	RE	LF-LF3 (C15-2)
7	LF2	OR	LF-LF2 (C15-3)

C7

Pin No.	Pin Name	Wire Color	Destination
1	–	–	–
2	LF3	YE	LF-LF1 (C15-4)
3	PLF	RE	LF-PLF (C1-6)
4	ADD	BE	LF-ADD (C15-5)
5	PLO	BR	LF-PLO (C1-4)

C8

Pin No.	Pin Name	Wire Color	Destination
1	CMO	S.RE	DIF-CMI (C12-1)
2	EK	S.RE	S
3	TRS4	GY	DIF-RST4 (C13-6)
4	TRG4	VI	MY-TRG (C1-4)
5	TRG2	GR	MY2-TRG (C1-4)
6	TRS2	BE	DIF-RST2 (C15-3)
7	TRS3	OR	DIF-RST3 (C13-4)

C9

Pin No.	Pin Name	Wire Color	Destination
1	AO0	BR	CPU-AO0 (C3-4)
2	AO1	RE	CPU-AO1 (C3-3)
3	AO3	OR	CPU-AO3 (C3-1)
4	AO2	YE	CPU-AO2 (C3-2)
5	–	–	–
6	OS1	GR	CPU-OS1 (C1-7)
7	OS2	BE	CPU-OS2 (C1-8)

C10

Pin No.	Pin Name	Wire Color	Destination
1	TRS5	GR	DIF-RST5 (C15-5)
2	TRG3	BE	MY3-TRG (C1-4)
3	TRG5	GY	MY5-TRG (C1-4)
4	TRS6	VI	DIF-RST6 (C15-7)
5	TRS1	YE	DIF-RST1 (C15-1)
6	TRG6	WH	MY6-TRG (C1-4)
7	TRG1	OR	MY1-TRG (C1-4)
8	TRG5	SB	JK-HTRG (C3-3)

C11

Pin No.	Pin Name	Wire Color	Destination
1	NLYQ	BE	LF-NLYQ (IC11-3)
2	FYQ	GR	LF-FYQ (C6-4)
3	FXQ	YE	LF-FXQ (C6-3)
4	NLXD	VI	LF-NLXD (IC11-4)
5	FXQ	OR	LF-FXQ (C6-2)
6	NLXQ	GY	LF-NLXQ (C11-1)
7	–	–	–

C12

Pin No.	Pin Name	Wire Color	Destination
1	CMI	S.RE	DIF-CMO (C8-1)
2	CV5	VI	JK-HCV (C3-5)
3	CV3	YE	MX3-CV (C1-3)
4	CV3	YE	MY3-CV (C1-3)
5	CV1	RE	MX1-CV (C1-3)
6	CV1	RE	MY1-CV (C1-3)
7	–	–	–

C13

Pin No.	Pin Name	Wire Color	Destination
1	ATCN	GG	LF-ATCN (C26-4)
2	ATCN	GG	LF-TAP (C10-5)
3	LTG	SB	LF-LTG (C19-3)
4	RST3	OR	DIF-TRS3 (C8-7)
5	RST3	VI	MY3-RST (C1-6)
6	RST4	GY	DIF-TRS4 (C8-2)
7	RST4	GY	MY4-RST (C1-6)

C14

Pin No.	Pin Name	Wire Color	Destination
1	EK	BL	MOX-EK (C3-7)
2	CV2	OR	MX2-CV (IC1-3)
3	CV2	OR	MY2-CV (IC1-3)
4	CV4	GR	MX4-CV (IC1-3)
5	CV4	GR	MY4-CV (IC1-3)
6	CV6	VI	MX6-CV (IC1-3)
7	CV6	VI	MY6-CV (IC1-3)
8	CV5	BE	MX5-CV (IC1-3)
9	CV5	BE	MY5-CV (IC1-3)
10	EK	BL	MOY-EK (IC3-7)

C15

Pin No.	Pin Name	Wire Color	Destination
1	RST1	YE	DIF-TRS1 (C10-5)
2	RST1	YE	MY1-RST (C1-6)
3	RST2	BE	DIF-TRS2 (C8-6)
4	RST2	BE	MY2-RST (C1-6)
5	RST5	GR	DIF-TRS5 (C10-1)
6	RST5	WH	MY5-RST (C1-6)
7	RST6	VI	DIF-TRS6 (C10-4)
8	RST6	SB	MY6-RST (C1-6)

C16

Pin No.	Pin Name	Wire Color	Destination
1	–	–	–
2	PYD	RE	LF-PYD (IC6-1)
3	LAT	GR	LF-LAT (IC19-2)
4	LDY	BE	LF-LDY (C19-1)
5	NLYD	WH	LF-NLYD (C11-2)

C17

Pin No.	Pin Name	Wire Color	Destination
1	+10	GR	DC-+10 (C2-5)
2	–5	BE	DC –5 (C2-6)
3	+15	BR	DC-+15 (C2-7)
4	+15	BR	DC-+15 (C2-8)
5	AE	BL	DC-AE (C2-2)
6	AE	BL	DC-AE (C2-3)
7	–15	YE	DC –15 (C2-9)
8	–15	YE	DC –15 (C2-10)

C18

Pin No.	Pin Name	Wire Color	Destination
1	AE		
2	AE		
3	AE		
4	AE		
5	AE		
6	AE		
7	AE		

C19

Pin No.	Pin Name	Wire Color	Destination
1	–	–	–
2	ATNY5	GG	MY5-ATN (IC1-1)
3	ATNY6	PK	MY6-ATN (IC1-1)
4	ATNY1	VI	MY1-ATN (IC1-1)
5	ATNY3	WH	MY3-ATN (IC1-1)
6	ATNY2	GY	MY2-ATN (IC1-1)
7	ATNY4	SB	MY4-ATN (IC1-1)

CN1

Pin No.	Pin Name	Destination
1	RESXQ	MOX-RESQ (CN1-1)
2	A*5XQ	MOX-A*5Q (CN1-2)
3	FROXQ	MOX-FROQ (CN1-3)
4	ASXQ	MOX-ASQ (CN1-4)
5	BPFXQ	MOX-BPFQ (CN1-5)
6	F*5XQ	MOX-F*5Q (CN1-6)
7	HPFXQ	MOX-HPFQ (CN1-7)
8	FSXQ	MOX-FSQ (CN1-8)
9	SAWXQ	MOX-SAWQ (CN1-9)
10	FRXQ	MOX-FRQ (CN1-10)
11	SQUXQ	MOX-SQUQ (CN1-11)
12	ARXQ	MOX-ARQ (CN1-12)
13	FT3XQ	MOX-FT3Q (CN1-13)
14	FDXQ	MOX-FDQ (CN1-14)
15	FTAXQ	MOX-FTAQ (CN1-15)
16	FAXQ	MOX-FAQ (CN1-16)
17	SINXQ	MOX-SINQ (CN1-17)
18	INVXQ	MOX-INVQ (CN1-18)
19	AAXQ	MOX-AAQ (CN1-19)
20	FT1XQ	MOX-FT1Q (CN1-20)
21	ADXQ	MOX-ADQ (CN1-21)
22	FT2XQ	MOX-FT2Q (CN1-22)
23	EDPXQ	MOX-EDPQ (CN1-23)
24	VOLXQ	MOX-VOLQ (CN1-24)
25	LPFXQ	MOX-LPFQ (CN1-25)
26	–	–

CN2

Pin No.	Pin Name	Destination
1	SQUXO	MOX-SQUO (CN2-1)
2	SAWXO	MOX-SAWO (CN2-2)
3	SINXO	MOX-SINO (CN2-3)
4	HPFXO	MOX-HPFO (CN2-4)
5	FT1XO	MOX-FT1O (CN2-5)
6	BPFXO	MOX-BPFO (CN2-6)
7	FT2XO	MOX-FT2O (CN2-7)
8	FROXO	MOX-FROO (CN2-8)
9	FT3XO	MOX-FT3O (CN2-9)
10	RESXO	MOX-RESO (CN2-10)
11	FT4XO	MOX-FT4O (CN2-11)
12	VOLXO	MOX-VOLO (CN2-12)
13	F*5XO	MOX-F*5O (CN2-13)
14	INVXO	MOX-INVO (CN2-14)
15	A*5XO	MOX-A*5O (CN2-15)
16	FAXO	MOX-FAO (CN2-16)
17	ASXO	MOX-ASO (CN2-17)
18	FSXO	MOX-FSO (CN2-18)
19	AAXO	MOX-AAO (CN2-19)
20	FRXO	MOX-FRO (CN2-20)
21	ADXO	MOX-ADO (CN2-21)
22	FDXO	MOX-FDO (CN2-22)
23	ARXO	MOX-ARO (CN2-23)
24	LPFXO	MOX-LPFO (CN2-24)
25	EDPXO	MOX-EDPO (CN2-25)
26	–	–

CN3

Pin No.	Pin Name	Destination
1	RESYQ	MOY-RESQ (CN1-1)
2	A*5YQ	MOY-A*5Q (CN1-2)
3	FROYQ	MOY-FROQ (CN1-3)
4	ASYQ	MOY-ASQ (CN1-4)
5	BRFYQ	MOY-BRFQ (CN1-5)
6	F*5YQ	MOY-F*5Q (CN1-6)
7	HPFYQ	MOY-HPFQ (CN1-7)
8	FSYQ	MOY-FSQ (CN1-8)
9	SAWYQ	MOY-SAWQ (CN1-9)
10	FRYQ	MOY-FAQ (CN1-10)
11	SQUYQ	MOY-SQUQ (CN1-11)
12	ARYQ	MOY-ARQ (CN1-12)
13	FT3YQ	MOY-FT3Q (CN1-13)
14	FDYQ	MOY-FDQ (CN1-14)
15	FTAYQ	MOY-FTQ (CN1-15)
16	FAYQ	MOY-FAQ (CN1-16)
17	SINYQ	MOY-SINQ (CN1-17)
18	INVYQ	MOY-INVQ (CN1-18)
19	AAYQ	MOY-AAQ (CN1-19)
20	FT1YQ	MOY-FT1Q (CN1-20)
21	ADYQ	MOY-ADQ (CN1-21)
22	FT2YQ	MOY-FT2Q (CN1-22)
23	EDPYQ	MOY-EDPQ (CN1-23)
24	VOLYQ	MOY-VOLQ (CN1-24)
25	LPFYQ	MOY-LPFQ (CN1-25)
26	–	–

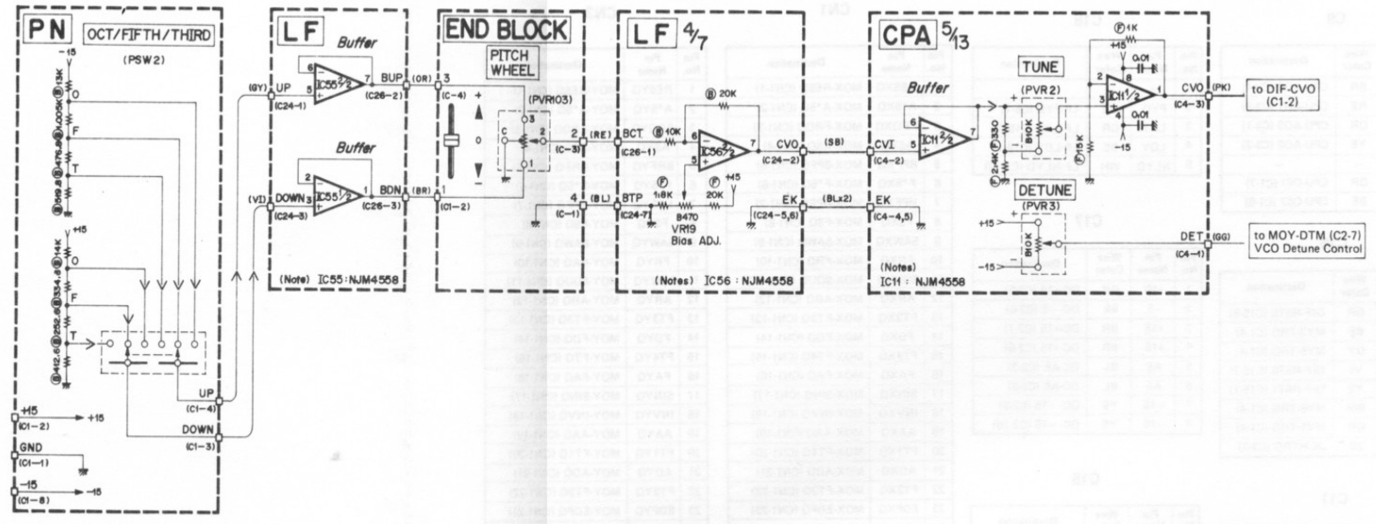
CN4

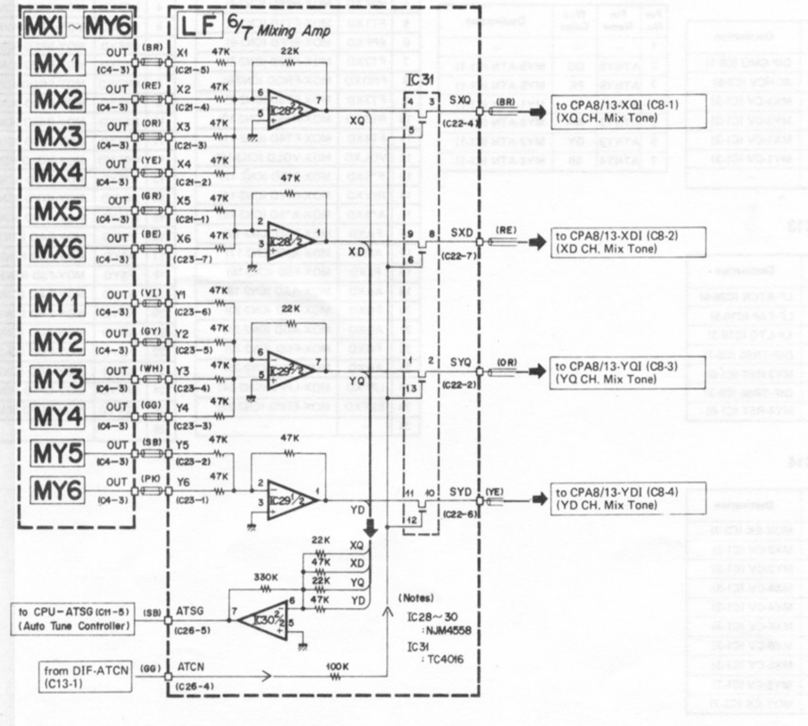
Pin No.	Pin Name	Destination
1	SQUYO	MOY-SQUO (CN2-1)
2	SAWYO	MOY-SAWO (CN2-2)
3	SINYO	MOY-SINO (CN2-3)
4	HPFYO	MOY-HPFO (CN2-4)
5	FT1YO	MOY-FT1O (CN2-5)
6	BPFYO	MOY-BPFO (CN2-6)
7	FT2YO	MOY-FT2O (CN2-7)
8	FROYO	MOY-FROO (CN2-8)
9	FT3YO	MOY-FT3O (CN2-9)
10	RESYO	MOY-RESO (CN2-10)
11	FT4YO	MOY-FT4O (CN2-11)
12	VOLYO	MOY-VOLO (CN2-12)
13	F*5YO	MOY-F*5O (CN2-13)
14	INVYO	MOY-INVO (CN2-14)
15	A*5YO	MOY-A*5O (CN2-15)
16	FAYO	MOY-FAO (CN2-16)
17	ASYO	MOY-ASO (CN2-17)
18	FSYO	MOY-FSO (CN2-18)
19	AAYO	MOY-AAO (CN2-19)
20	FRYO	MOY-FRO (CN2-20)
21	ADYO	MOY-ADO (CN2-21)
22	FDYO	MOY-FDO (CN2-22)
23	ARYO	MOY-ARO (CN2-23)
24	LPFYO	MOY-LPFO (CN2-24)
25	EDPYO	MOY-EDPO (CN2-25)
26	–	–

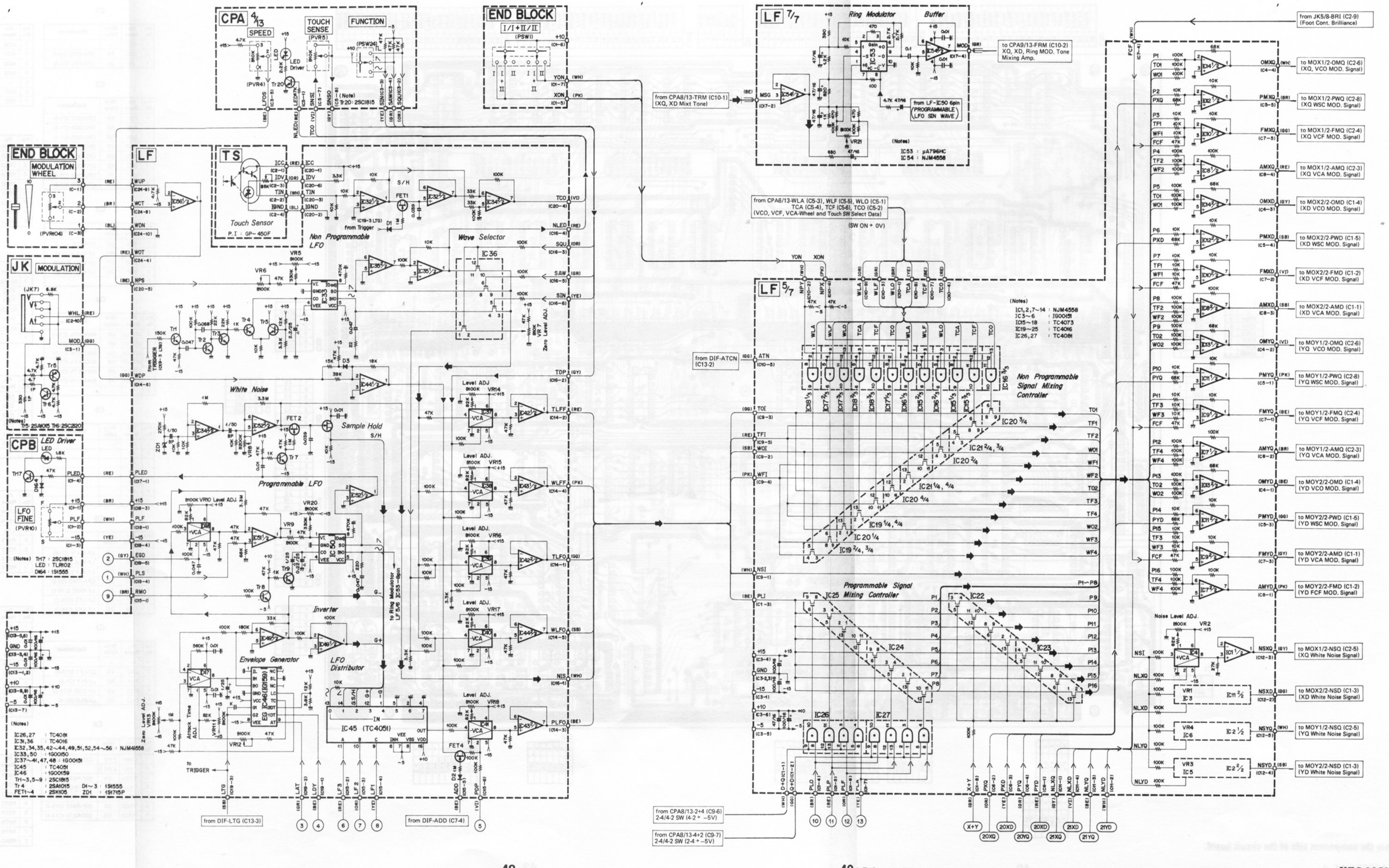
Notes)

1. Circuit Board : LC86990 Ⓟ
2. Transistor
   - Tr1 ~ 12, 14 ~ 17 : 2SC1815
   - Tr13 : 2SA1015
3. IC
   - IC1, 2 : TC4515BP
   - IC3, 5, 12, 13, 34, 35, 24, 25 : TC40175BP
   - IC4, 6, 15 ~ 18, 27 ~ 30 : TC40174BP
   - IC7 ~ 11, 19 ~ 23, 31 ~ 33, 37 : TC4051BP
   - IC14, 26 : μPC624
   - IC36 : TC4028BP
   - IC38, 39 : TA7504S
   - IC40, 42 ~ 47 : TA7505M
   - IC56 ~ 65, 66 ~ 75 : TL084CN
   - IC49 ~ 53, 81, 82, 84, 85 : TC4013BP
   - IC54, 55, 80, 83 : μPD4069C
   - IC76 ~ 78 : TC4016BP
4. Diode
   - D1 ~ 20 : 1S1555
5. Capacitor
   - ( ) marked : Ceramic Capacitor
6. Resistor
   - R1 : 10K x 4(A) } Module Resistor
   - R2 : 10K x 4(A) } Module Resistor
   - R3 : 10K x 4(A) } Module Resistor
   - Ⓕ marked : Metal Film Resistor (± 1%)
   - Ⓑ marked : Metal Film Resistor (± 0.1%)

LF Circuit Diagram







	ADDRESS NO	CPB		DIF	LF	FUNCTION
		PSW	FUNCTION PARAMETERS			
LFO	(1)	7	SPEED	PLS (C3-2)	PLS (C19-4)	
	(2)	8	EG-DEPTH	EGO (C3-3)	EGD (C19-5)	
	(3)	9	ATTACK-TIME	LAT (C16-3)	LAT (C19-2)	
	(4)	10	DECAY-TIME	LDY (C16-4)	LDY (C19-1)	
	(5)	11	MODULATION-DEPTH	PDP (C3-4)	PDP (C15-6)	
	(6)~(8)	12	∼			
		13	⋀	6 LF1 (C6-6)	LF3 (C15-2)	
		16	S/H	7 LF2 (C6-7)	LF2 (C15-3)	
		14	GLIDE +	8 LF3 (C7-2)	LF1 (C15-4)	
		17	GLIDE -			
	(9)	15	RMO	RMO (C6-4)	CPA-RMO (C9-5)	
	(9)	15	RMO	RMO (C6-5)	RMO (C15-1)	
	(10)	18	VCO DESTINATION	PLO (C7-5)	PLO (C1-4)	
	(11)	19	PW	PLP (C7-3)	PLP (C1-5)	
	(12)	20	VCF	PLF (C6-3)	PLF (C1-6)	
	(13)	21	VCA	PLA (C6-2)	PLA (C1-7)	
	(ADD)	23	WHEEL	ADD (C7-4)	ADD (C15-5)	
	(X+Y)	22	I+II	X+Y (C6-1)	X+Y (C1-8)	

※ LFO WAVE SELECTOR (Logic Level I: +10V O: -5V)

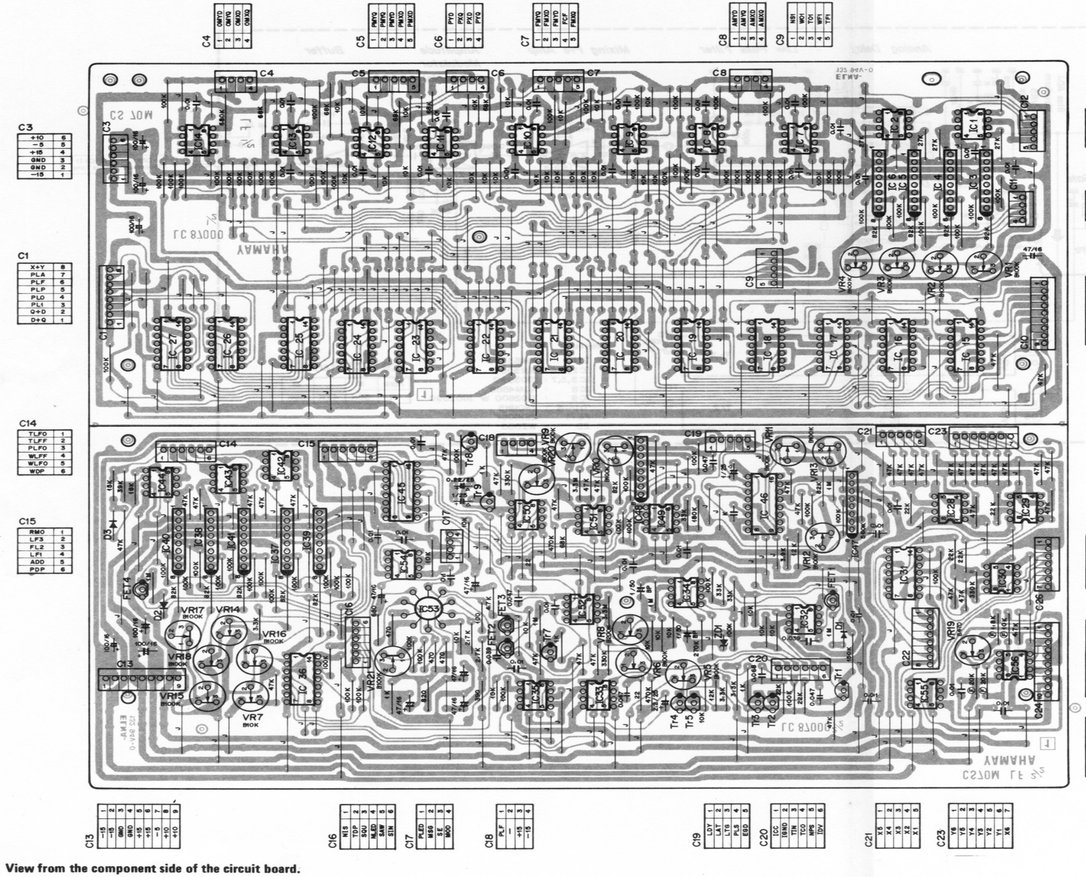
	∼	⋀	S/H	G+	G-
LF3	L	L	L	L	H
LF2	L	L	H	H	L
LF1	L	L	L	H	L

FOOTAGE CHANGE (Logic Level I: +10V O: -5V)

	2′	2 2/3′	4′	5 1/3′	8′	16′
FT1	H	L	L	L	L	L
FT2	L	H	H	L	L	L
FT3	L	H	L	H	H	L
FT4	L	L	L	H	L	H

	ADDRESS NO	CPB			DIF					MOX, MOY			M	
		PSW NO	FUNCTION PARAMETERS		Name	XQ	XD	YQ	YD	Name	XQ YQ	XD YD	MX1 ∼ MX6 MY1 ∼ MY6	
VCO	(14)	66,67	FEET I	FEET II	FT1	(CN1-20)	(CN2-5)	(CN3-20)	(CN4-5)	FT1	(CN1-20)	(CN2-5)	FT1	(C2-3)
	(15)		(XQ, XD)	(YQ, YD)	FT2	(CN1-22)	(CN2-7)	(CN3-22)	(CN4-7)	FT2	(CN1-22)	(CN2-7)	FT2	(C2-5)
	(16)				FT3	(CN1-13)	(CN2-9)	(CN3-13)	(CN4-9)	FT3	(CN1-13)	(CN2-9)	FT3	(C2-4)
	(17)				FT4	(CN1-15)	(CN2-11)	(CN3-15)	(CN4-11)	FT4	(CN1-15)	(CN2-11)	FT4	(C2-2)
	(18)	35	⋀		SAW	(CN1-9)	(CN2-2)	(CN3-9)	(CN4-2)	SAW	(CN1-9)	(CN2-2)	SAW	(C2-12)
	(19)	36	⊓		SQU	(CN1-11)	(CN2-1)	(CN3-11)	(CN4-1)	SQU	(CN1-11)	(CN2-1)	SQU	(C2-11)
	(20)	37	PW		P	(C11-5)	(C11-3)	(C11-2)	(C16-2)	PM	(C2-8)	(C1-5)	PW	(C2-1)
	(21)	38	NOISE		NL	(C11-6)	(C11-4)	(C11-1)	(C16-5)	NS	(C2-5)	(C1-3)	WNS	(C2-15)
VCF	(22)	39	HPF		HPF	(CN1-7)	(CN2-4)	(CN3-7)	(CN4-4)	HPF	(CN1-7)	(CN2-4)	HPF	(C2-13)
	(23)	40	TIME x 5		FX5	(CN1-6)	(CN2-13)	(CN3-6)	(CN4-13)	FX5	(CN1-6)	(CN2-13)	FX5	(C3-16)
	(24)	41	BPF		BPF	(CN1-5)	(CN2-6)	(CN3-5)	(CN4-6)	BPF	(CN1-5)	(CN2-6)	BPF	(C2-14)
	(25)	42	✓		INV	(CN1-18)	(CN2-14)	(CN3-18)	(CN4-14)	INV	(CN1-18)	(CN2-14)	INV	(C3-4)
	(26)	43	CUT OFF FREQ.		FRQ	(CN1-3)	(CN2-8)	(CN3-3)	(CN4-8)	FRQ	(CN1-3)	(CN2-8)	FRQ	(C2-19)
	(27)	44	RESONANCE		RES	(CN1-1)	(CN2-10)	(CN3-1)	(CN4-10)	RES	(CN1-1)	(CN2-10)	RES	(C2-22)
	(28)	45	EG-DEPTH		EDP	(CN1-23)	(CN2-25)	(CN3-23)	(CN4-25)	EDP	(CN1-23)	(CN2-25)	EDP	(C3-1)
	(29)	46	ATTACK TIME		FA	(CN1-16)	(CN2-16)	(CN3-16)	(CN4-16)	FA	(CN1-16)	(CN2-16)	FA	(C3-5)
	(30)	47	DECAY TIME		FD	(CN1-14)	(CN2-22)	(CN3-14)	(CN4-22)	FD	(CN1-14)	(CN2-22)	FD	(C3-6)
	(31)	48	SUSTAIN LEVEL		FS	(CN1-8)	(CN2-18)	(CN3-8)	(CN4-18)	FS	(CN1-8)	(CN2-18)	FS	(C3-8)
	(32)	49	RELEASE TIME		FR	(CN1-10)	(CN2-20)	(CN3-10)	(CN4-20)	FR	(CN1-10)	(CN2-20)	FR	(C3-7)
VCA	(33)	50	TIME X5		AX5	(CN1-2)	(CN2-15)	(CN3-2)	(CN4-15)	AX5	(CN1-10)	(CN2-15)	AX5	(C3-17)
	(34)	52	∼		SIN	(CN1-17)	(CN2-3)	(CN3-17)	(CN4-3)	SIN	(CN1-17)	(CN2-3)	NIS	(C2-7)
	(35)	53	ATTACK TIME		AA	(CN1-19)	(CN2-19)	(CN3-19)	(CN4-19)	AA	(CN1-19)	(CN2-19)	AA	(C3-20)
	(36)	54	DECAY TIME		AD	(CN1-21)	(CN2-21)	(CN3-21)	(CN4-21)	AD	(CN1-21)	(CN2-21)	AD	(C3-21)
	(37)	55	SUSTAIN LEVEL		AS	(CN1-4)	(CN2-17)	(CN3-4)	(CN4-17)	AS	(CN1-4)	(CN2-17)	AS	(C3-18)
	(38)	56	RELEASE TIME		AR	(CN1-12)	(CN2-23)	(CN3-12)	(CN4-23)	AR	(CN1-12)	(CN2-23)	AR	(C3-22)
	(39)	57	VOLUME		VOL	(CN1-24)	(CN2-12)	(CN3-24)	(CN4-12)	VOL	(CN1-24)	(CN2-12)	VOL	(C3-3)
※ VCF	(40)		LPF (BPF, HPF OFF)		LPF	(CN1-25)	(CN2-24)	(CN3-25)	(CN4-24)	LPF	(CN1-25)	(CN2-24)	LPF	(C3-2)

LF Circuit Board & Wiring



View from the component side of the circuit board.

KEP-NA80777-14 ⚠

C1

Pin No.	Pin Name	Wire Color	Destination
1	D+O	WH	CPA-2+4 (C9-7)
2	O+D	GG	CPA-4+2 (C9-6)
3	PL1	BE	LF-PLFO (C14-3)
4	PLO	BR	DIF-PLO (C7-5)
5	PLP	RE	DIF-PLP (C7-3)
6	PLF	OR	DIF-PLF (C6-3)
7	PLA	YE	DIF-PLA (C6-2)
8	X+Y	GR	DIF-X+Y (C6-1)

C3

Pin No.	Pin Name	Wire Color	Destination
1	−15	YE	DC- −15 (C3-10)
2	GND	BL	DC-AE (C3-3)
3	GND	BL	LF-GND (C26-7)
4	+15	BR	DC-+15 (C3-8)
5	−5	BE	DC- −5 (C3-6)
6	+10	GR	DC-+10 (C3-5)

C4

Pin No.	Pin Name	Wire Color	Destination
1	OMYQ	BE	MOY-OMDD (C1-4)
2	OMYQ	VI	MOY-OMDD (C2-6)
3	OMXO	GY	MOX-OMDD (C1-4)
4	OMXQ	WH	MOX-OMDD (C2-6)

C5

Pin No.	Pin Name	Wire Color	Destination
1	PMYQ	PK	MOY-PWQ (C2-8)
2	PMYQ	—	—
3	PMYD	GG	MOY-PWD (C1-5)
4	PMXD	SB	MOX-FWD (C1-5)
5	PMXD	BR	MOX-PWQ (C2-8)

C6

Pin No.	Pin Name	Wire Color	Destination
1	PYD	RE	DIF-PYD (C16-2)
2	PXO	OR	DIF-PXO (C11-5)
3	PXD	YE	DIF-PXO (C11-3)
4	PYQ	GR	DIF-PYQ (C11-2)

C7

Pin No.	Pin Name	Wire Color	Destination
1	FMYQ	BE	MOY-FMDQ (C2-4)
2	FMXD	VI	MOX-FMDD (C1-2)
3	FMYD	GY	MOY-FMDD (C1-2)
4	FCF	WH	JK-BRI (C2-9)
5	FMXQ	GG	MOX-FMDQ (C2-4)

C8

Pin No.	Pin Name	Wire Color	Destination
1	AMYQ	PK	MOY-AMDD (C1-1)
2	AMYQ	BR	MOY-AMDQ (C2-3)
3	AMXO	SB	MOX-ANDD (C1-1)
4	AMXQ	RE	MOX-AMDQ (C2-3)

C9

Pin No.	Pin Name	Wire Color	Destination
1	NSI	WH	LF-NIS (C16-1)
2	WOI	SB	LF-WLFO (C14-6)
3	TOI	GG	LF-TLFO (C14-1)
4	WFI	PK	LF-WLFF (C14-4)
5	TFI	RE	LF-TLFF (C14-2)

C10

Pin No.	Pin Name	Wire Color	Destination
1	WLO	BR	CPA-WLO (C5-1)
2	NPY	WH	PN-YON (C1-7)
3	WLF	GR	CPA-WLF (C5-5)
4	TCO	RE	CPA-TCO (C5-2)
5	ATN	GG	DIF-ATCN (C13-2)
6	NPX	PK	PN-XOM (C1-5)
7	TCF	BE	CPA-TCF (C5-6)
8	TCA	YE	CPA-TCA (C5-4)
9	WLA	OR	CPA-WLA (C5-3)

C11

Pin No.	Pin Name	Wire Color	Destination
1	NLXQ	GY	DIF-NLXQ (C11-6)
2	NLYD	WH	DIF-NLYD (C16-5)
3	NLYQ	BE	DIF-NLYQ (C11-1)
4	NLXD	VI	DIF-NLXD (C11-4)

C12

Pin No.	Pin Name	Wire Color	Destination
1	—	—	—
2	NSXD	GG	MOX-WNSD (C1-3)
3	NSXQ	GY	MOX-WNSQ (C2-5)
4	NSYD	SB	MOY-WNSD (C1-3)
5	NSYQ	WH	MOY-WNSQ (C2-5)

C13

Pin No.	Pin Name	Wire Color	Destination
1	−15	YE	PN- −15 (C1-8)
2	−15	YE	DC- −15 (C4-10)
3	GND	BL	JK-E2 (C2-3)
4	GND	BL	DC-AE (C4-3)
5	+15	BR	PN-+15 (C1-2)
6	+15	BR	DC-+15 (C4-8)
7	−5	BE	DC- −5 (C4-7)
8	+10	GR	PN-+10 (C1-6)
9	+10	GR	DC-+10 (C4-6)

C14

Pin No.	Pin Name	Wire Color	Destination
1	TLFO	GG	LF-TOI (C9-3)
2	TLFF	RE	LF-TFI (C9-5)
3	PLFO	BE	LF-PLI (C1-3)
4	WLFF	PK	LF-WFI (C9-4)
5	WLFO	SB	LF-WOI (C9-2)
6	WDP	GG	JK-MOD (C3-1)

C15

Pin No.	Pin Name	Wire Color	Destination
1	RMO	BR	DIF-RMO (C6-5)
2	LF3	RE	DIF-LF1 (C6-6)
3	FL2	OR	DIF-LF2 (C6-7)
4	LF1	YE	DIF-LF3 (C7-2)
5	ADD	BE	DIF-ADD (C7-4)
6	PDP	VI	DIF-PDP (C3-4)

C16

Pin No.	Pin Name	Wire Color	Destination
1	NIS	WH	LF-NSI (C9-1)
2	TDP	GY	CPA-SNSO (C5-8)
3	SQU	OR	CPA-SQU (C3-2)
4	NLED	RE	CPA-LED (C3-1)
5	SAW	GR	CPA-SAW (C3-4)
6	SIN	YE	CPA-SIN (C3-3)

C17

Pin No.	Pin Name	Wire Color	Destination
1	PLED	RE	CPB-PLED (C1-4)
2	MSG	S RE	CPA-TRM (C10-1)
3	SE	S GR S	
4	MOD	S GR	CPA-FRM (C10-2)

C18

Pin No.	Pin Name	Wire Color	Destination
1	PLF	WH	CPB-PLF (C1-2)
2	—	—	—
3	+15	BR	CPB-+15 (C1-1)
4	−15	YE	CPB- −15 (C1-3)

C19

Pin No.	Pin Name	Wire Color	Destination
1	LDY	BE	DIF-LDY (C16-4)
2	LAT	GR	DIF-LAT (C16-3)
3	LTG	SB	DIF-LTG (C13-3)
4	PLS	WH	DIF-PLS (C3-2)
5	EGD	GY	DIF-EGD (C3-3)

C20

Pin No.	Pin Name	Wire Color	Destination
1	ICC	RE	TS-ICC (C2-1)
2	IGND	BL	TS-IGND (C2-4)
3	TIN	WH	TS-TIN (C2-2)
4	TCO	VI	CPA-SNSI (C5-7)
5	NPS	BE	CPA-LFOS (C3-5)
6	IDV	OR	TS-IDV (C2-3)

C21

Pin No.	Pin Name	Wire Color	Destination
1	X5	S GR	MX5-OUT (C4-3)
2	X4	S YE	MX4-OUT (C4-3)
3	X3	S OR	MX3-OUT (C4-3)
4	X2	S RE	MX2-OUT (C4-3)
5	X1	S BR	MX1-OUT (C4-3)

C22

Pin No.	Pin Name	Wire Color	Destination
1	SE	S OR S	
2	SYQ	S OR	CPA-YQI (C8-3)
3	SE	S BR S	
4	SXQ	S BR	CPA-XQI (C8-1)
5	SE	S YE S	
6	SYD	S YE	CPA-YDI (C8-4)
7	SXD	S RE	CPA-XDI (C8-2)
8	SE	S RE S	

C23

Pin No.	Pin Name	Wire Color	Destination
1	Y6	S PK	MY6-OUT (C4-3)
2	Y5	S SB	MY5-OUT (C4-3)
3	Y4	S GG	MY4-OUT (C4-3)
4	Y3	S WH	MY3-OUT (C4-3)
5	Y2	S GY	MY2-OUT (C4-3)
6	Y1	S VI	MY1-OUT (C4-3)
7	X6	S BE	MX6-OUT (C4-3)

C24

Pin No.	Pin Name	Wire Color	Destination
1	UP	GY	PN-UP (C1-4)
2	CVO	SB	CPA-CVI (C4-2)
3	DOWN	VI	PN-DOWN (C1-3)
4	WOT	RE	JK-WHL (C2-10)
5	EK	BL	PN-GND (C1-1)
6	EK	BL	CPA-EK1 (C4-4)
7	BTP	BL	PVR103-4 (C1-1)
8	WCT	BR	PVR104-2 (C1-2)
9	WUP	RE	PVR104-3 (C1-1)
10	WDN	BL	PVR104-1 (C1-3)

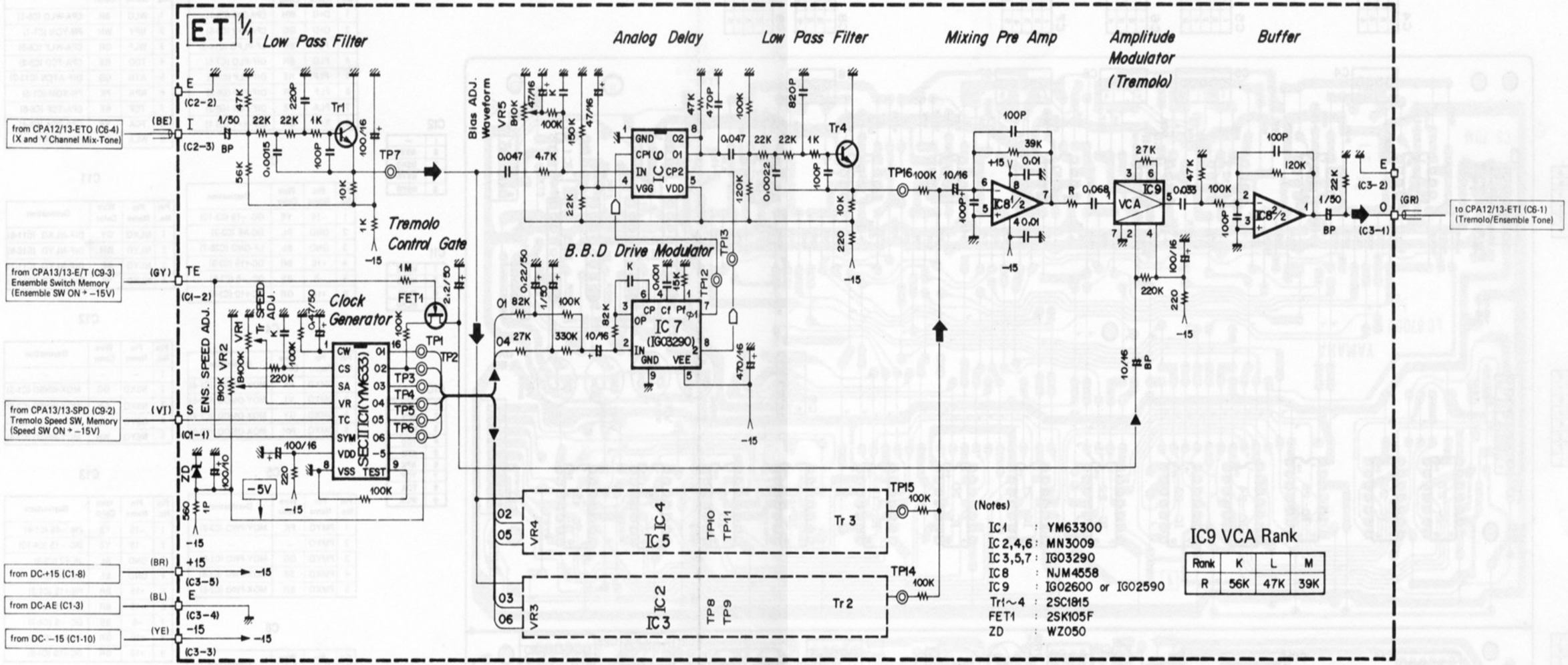
C26

Pin No.	Pin Name	Wire Color	Destination
1	BCT	RE	PVR103-2 (C1-3)
2	BUP	OR	PVR103-3 (C1-4)
3	BDN	BR	PVR103-1 (C1-2)
4	ATCN	GG	DIF-ATCN (C13-1)
5	ATSQ	S SB	CPU-ATSQ (C11-5)
6	SE	S SB S	
7	GND	BL	LF-GND (C3-3)

Notes)

1. Circuit Board : LC87000 Ⓕ
2. Transistor
   - Tr1 ~ 3, 7 ~ 9 : 2SC1815
   - Tr4 : 2SA1015
3. FET
   - FET1 ~ 4 : 2SK105(F)
4. IC
   - IC1, 2, 7 ~ 14, 28 ~ 30, 34, 35, 42 ~ 44, 49, 51, 52, 54 ~ 56 : NJM4558DV (OP-Amp)
   - IC3 ~ 6, 37 ~ 41, 47, 48 : iG00151 (VCA)
   - IC15 ~ 18 : TC4073BP
   - IC19 ~ 25, 31, 36 : TC4016BP (Analog-SW)
   - IC26, 27 : TC4081BP (2 IN AND)
   - IC32 : TL082
   - IC45 : TC4051
   - IC46 : iG00159 (EG-VCA)
   - IC53 : μA796HC
   - IC33, 50 : iG00150 (VCOIII)
5. Diode
   - D1 ~ 3 : 1S1555
6. Zener Diode
   - ZD1 : 1S1715P
7. Capacitor
   - ( ) marked : Ceramic Capacitor
   - K marked : Ceramic Capacitor 1000P
   - ▲ marked : Solid Alminum Capacitor
   - * marked : Tantalum Capacitor
8. Resistor
   - Ⓑ marked : 0.1% 25ppm Metal Film Resistor
   - Ⓕ marked : 1% 100ppm Metal Film Resistor

ET Circuit Diagram



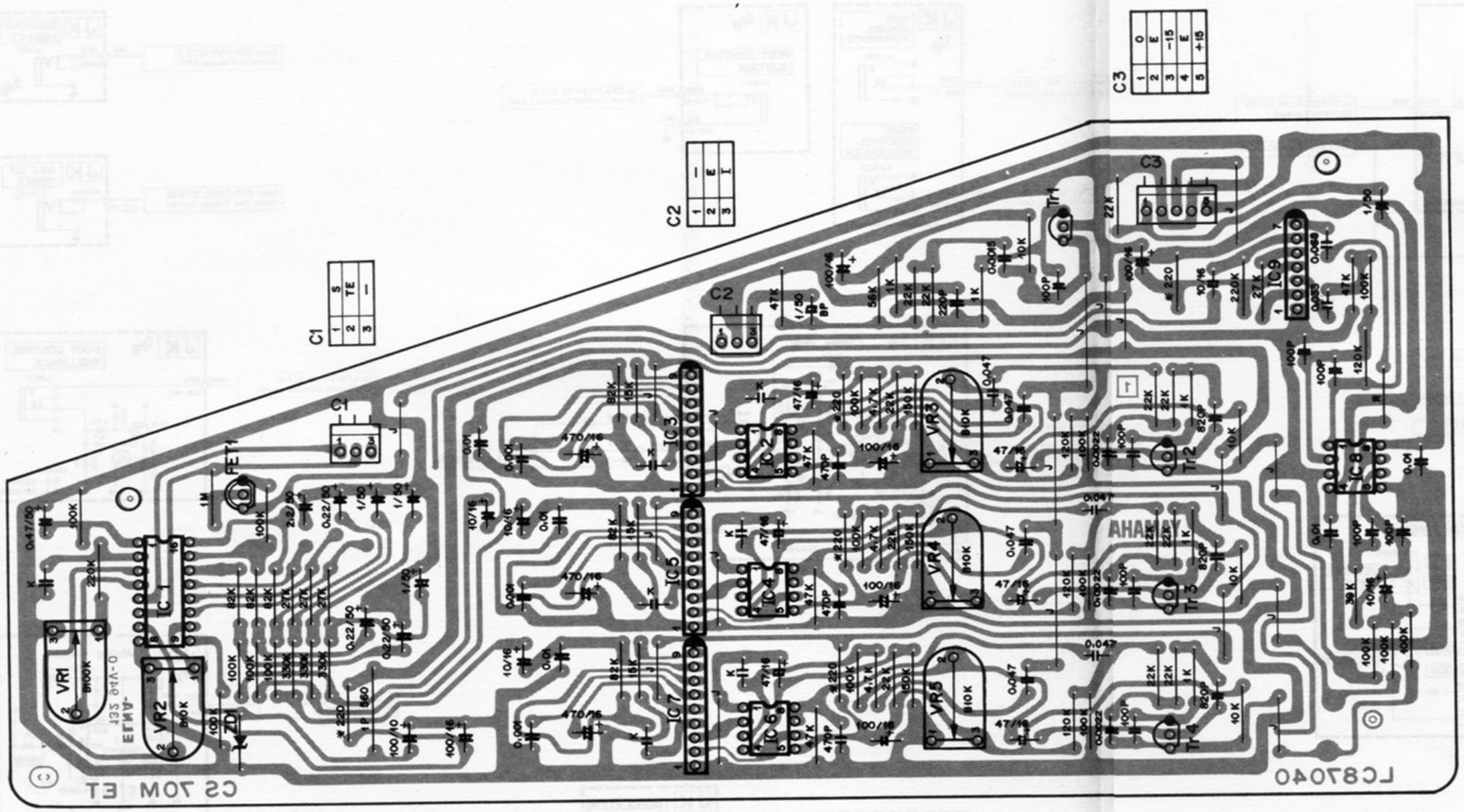
(Notes)

IC1	:	YM63300
IC 2,4,6	:	MN3009
IC 3,5,7	:	IG03290
IC8	:	NJM4558
IC9	:	IG02600 or IG02590
Tr1～4	:	2SC1815
FET1	:	2SK105F
ZD	:	WZ050

IC9 VCA Rank

Rank	K	L	M
R	56K	47K	39K

ET Circuit Board & Wiring



View from the component side of the circuit board.

C1

Pin No.	Pin Name	Wire Color	Destination
1	S	VI	CPA-SPD (C9-2)
2	TE	GY	CPA-E/T (C9-3)
3	–	–	–

C2

Pin No.	Pin Name	Wire Color	Destination
1	–	–	–
2	E	–	–
3	I	S BE	CPA-ETO (C6-4)

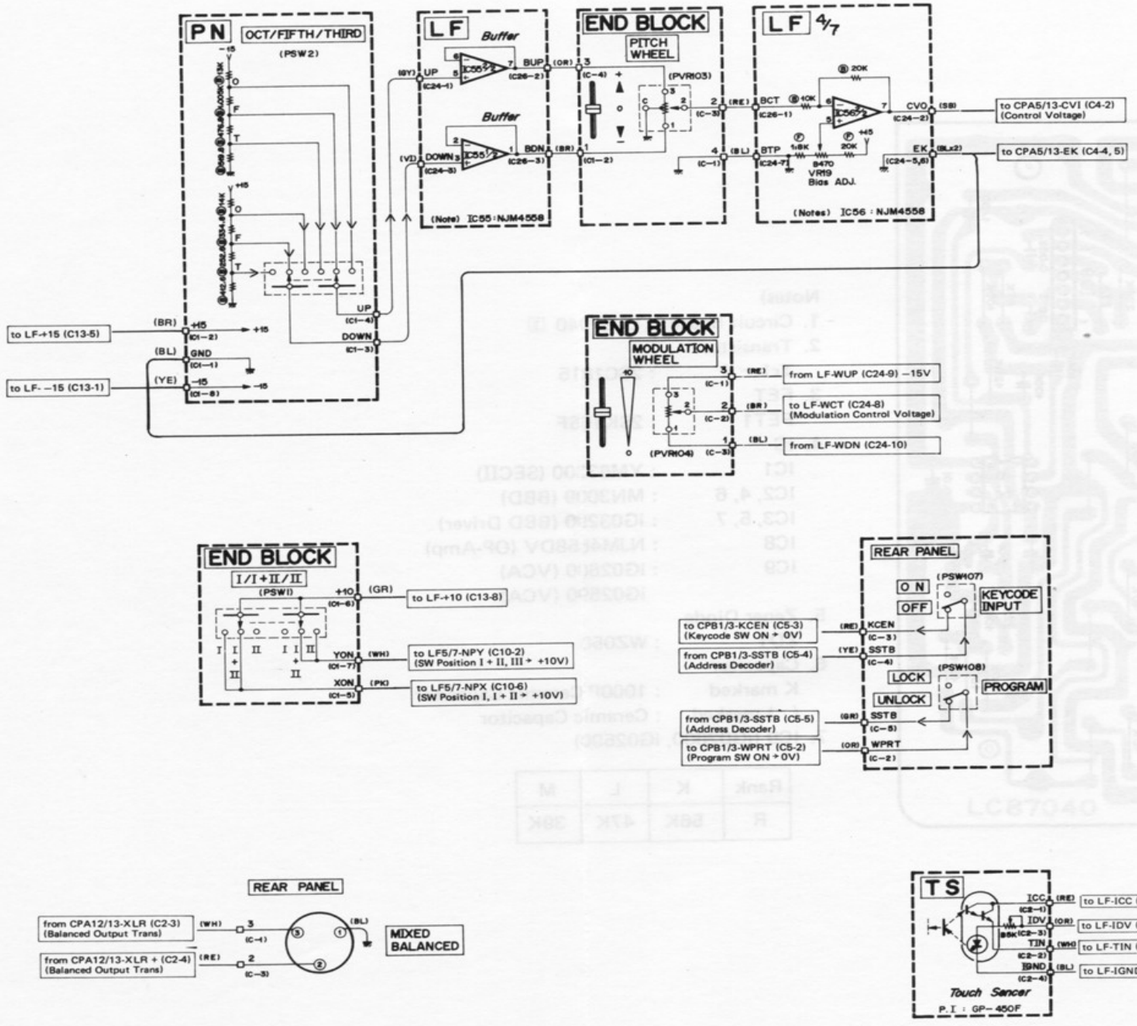
C3

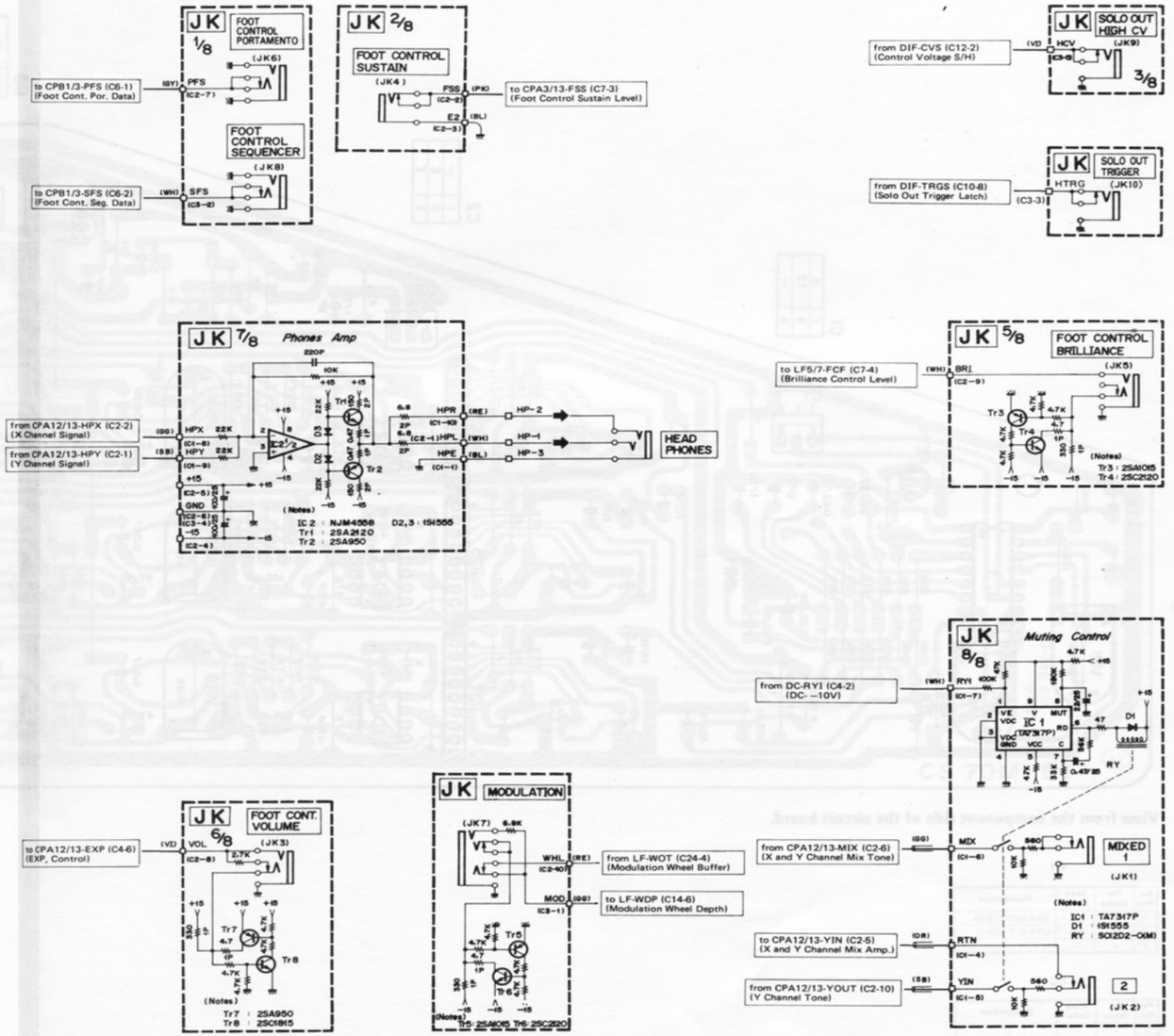
Pin No.	Pin Name	Wire Color	Destination
1	O	S GR	CPA-ETI (C6-1)
2	E	S GR S	
3	–15	YE	DC– –15 (C1-10)
4	E	BL	DC-AE (C1-3)
5	+15	BR	DC-+15 (C1-8)

Notes)
1. Circuit Board : LC87040 [1]
2. Transistor
   Tr1 ~ 4 : 2SC1815
3. FET
   FET1 : 2SK105F
4. IC
   IC1 : YM63300 (SECII)
   IC2, 4, 6 : MN3009 (BBD)
   IC3, 5, 7 : iG03290 (BBD Driver)
   IC8 : NJM4558DV (OP-Amp)
   IC9 : iG02600 (VCA)
   iG02590 (VCA)
5. Zener Diode
   ZD1 : WZ050
6. Capacitor
   K marked : 1000P Ceramic Capacitor
   ( ) marked : Ceramic Capacitor
7. IC9 (iG02600, iG02590)

Rank	K	L	M
R	56K	47K	39K

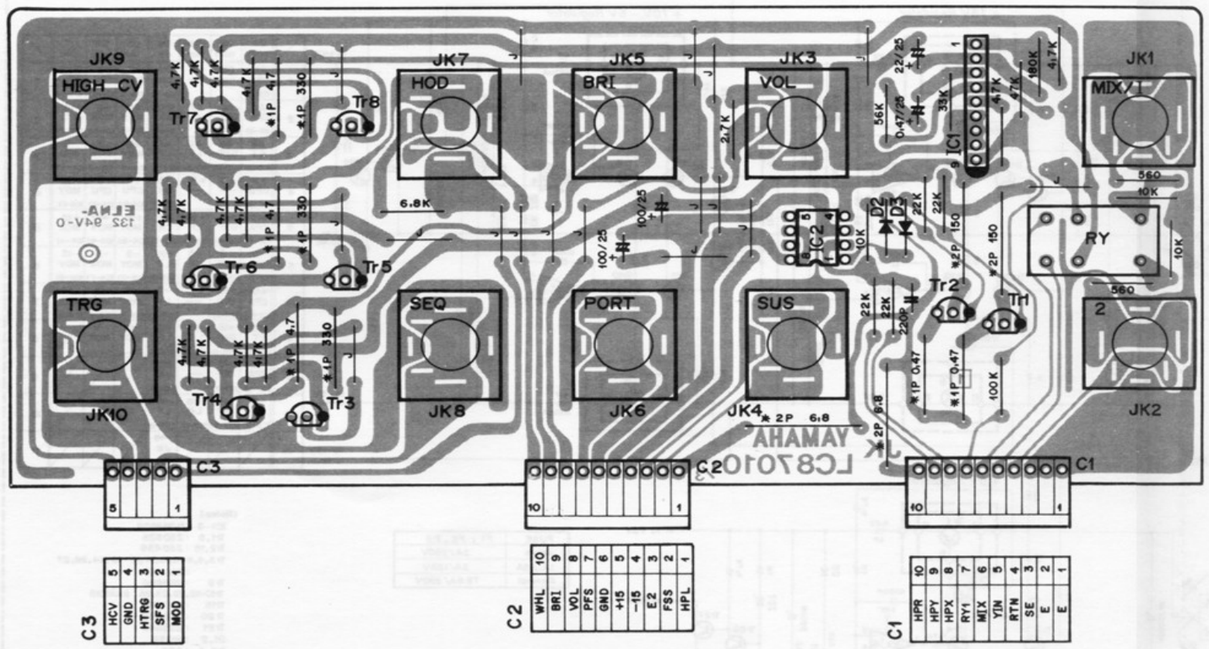
JK, TS, PN Circuit Diagram





JK, TS, PN Circuit Board & Wiring

JK



View from the component side of the circuit board.

C1

Pin No.	Pin Name	Wire Color	Destination
1	E	BL	HP-3
2	E	BL	CPA-GND (C2-8)
3	SE	S OR S	
4	RTN	S OR	CPA-YIN (C2-5)
5	YIN	S SB	CPA-YOUT (C2-10)
6	MIX	S GG	CPA-MIX (C2-6)
7	RY1	WH	DC-RY1 (C4-2)
8	HPX	GG	CPA-HPX (C2-2)
9	HPY	SB	CPA-HPY (C2-1)
10	HPR	RE	HP-2

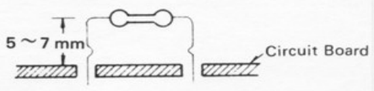
C3

Pin No.	Pin Name	Wire Color	Destination
1	MOD	GG	LF-WDP (C14-6)
2	SFS	WH	CPB-SFS (C6-2)
3	HTRG	SB	DIF-TRGS (C10-8)
4	GND	–	–
5	HCV	VI	DIF-CVS (C12-2)

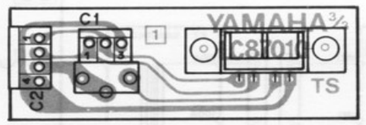
C2

Pin No.	Pin Name	Wire Color	Destination
1	HPL	WH	HP-1
2	FSS	PK	CPA-FSS (C7-3)
3	E2	BL	LF-GND (C13-3)
4	−15	YE	DC- −15 (C4-11)
5	+15	BR	DC-+15 (C4-9)
6	GND	BL	DC-AE (C4-4)
7	PFS	GY	CPB-PFS (C6-1)
8	VOL	VI	CPA-EXP (C4-6)
9	BRI	WH	LF-FCF (C7-4)
10	WHL	RE	LF-WOT (C24-4)

Notes)
1. Circuit Board : LC87010 [1] 1/3
2. IC
   IC1 : TA7317P
   IC2 : NJM4558DV (OP-Amp)
3. Transistor
   Tr1, 4, 6 : 2SC2120
   Tr2, 7 : 2SA950
   Tr3, 5 : 2SA1015
   Tr8 : 2SC1815
4. Diode
   D1 ~ 3 : 1S1555
5. Resistor
   * marked : Metal Oxide Film Resistor
   Mount as show below.



TS



Note)
1. Circuit Board : LC87010 [1] 2/3

View from the printed pattern side of the circuit board.

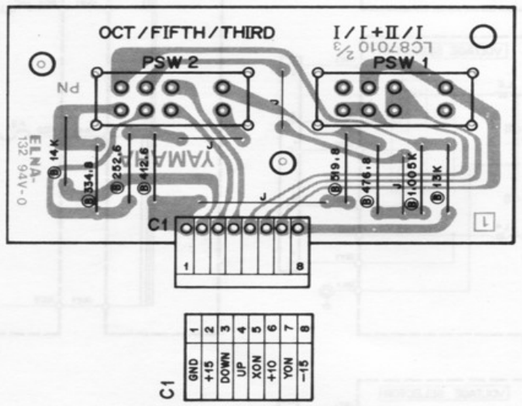
C1

Pin No.	Pin Name	Wire Color	Destination
1	CP1	–	–
2	CP2	–	–
3	CP3	–	–

C2

Pin No.	Pin Name	Wire Color	Destination
1	ICC	RE	LF-ICC (C20-1)
2	TIN	WH	LF-TIN (C20-3)
3	IDV	OR	LF-IDV (C20-6)
4	IGND	BL	LF-IGND (C20-2)

PN



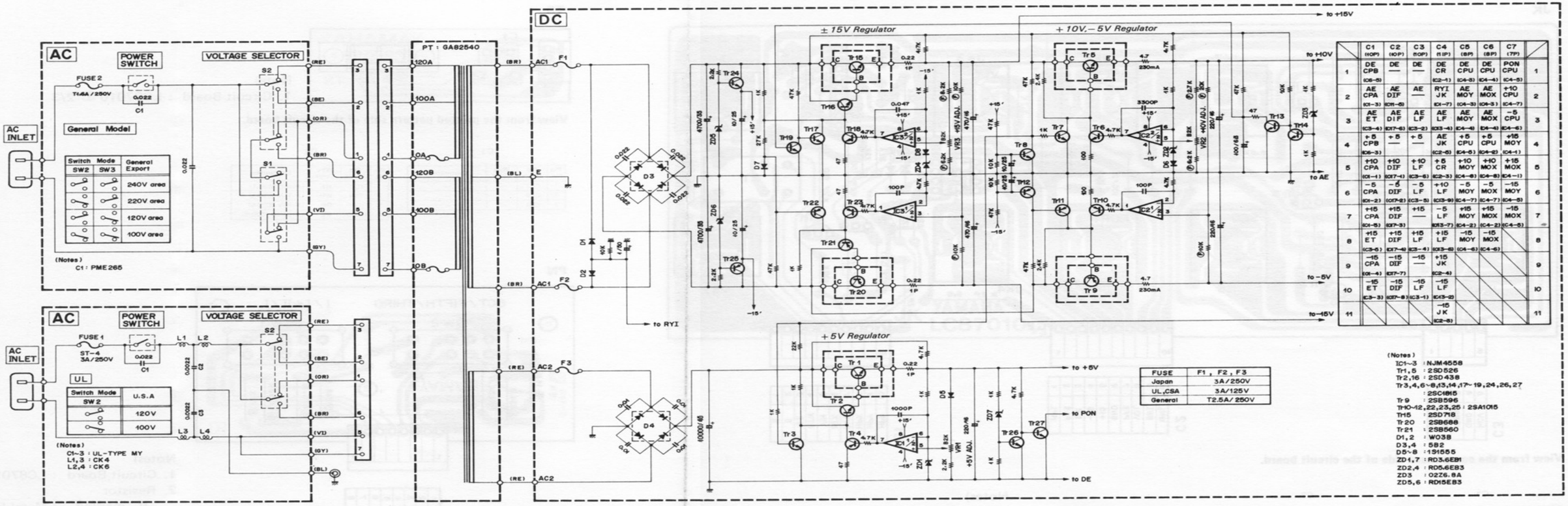
View from the component side of the circuit board.

C1

Pin No.	Pin Name	Wire Color	Destination
1	GND	BL	LF-EK (C24-5)
2	+15	BR	LF-+15 (C13-5)
3	DOWN	VI	LF-DOWN (C24-3)
4	UP	GY	LF-UP (C24-1)
5	XON	PK	LF-NPX (C10-6)
6	+10	GR	LF-+10 (C13-8)
7	YON	WH	LF-NPY (C10-2)
8	−15	YE	LF- −15 (C13-1)

Notes)
1. Circuit Board : LC87010 [1] 3/3
2. Resistor
   B marked : Metal Film Resistor (± 0.1%)
3. SW
   PSW1, 2 : 2 way 3 contact

DC Circuit Diagram

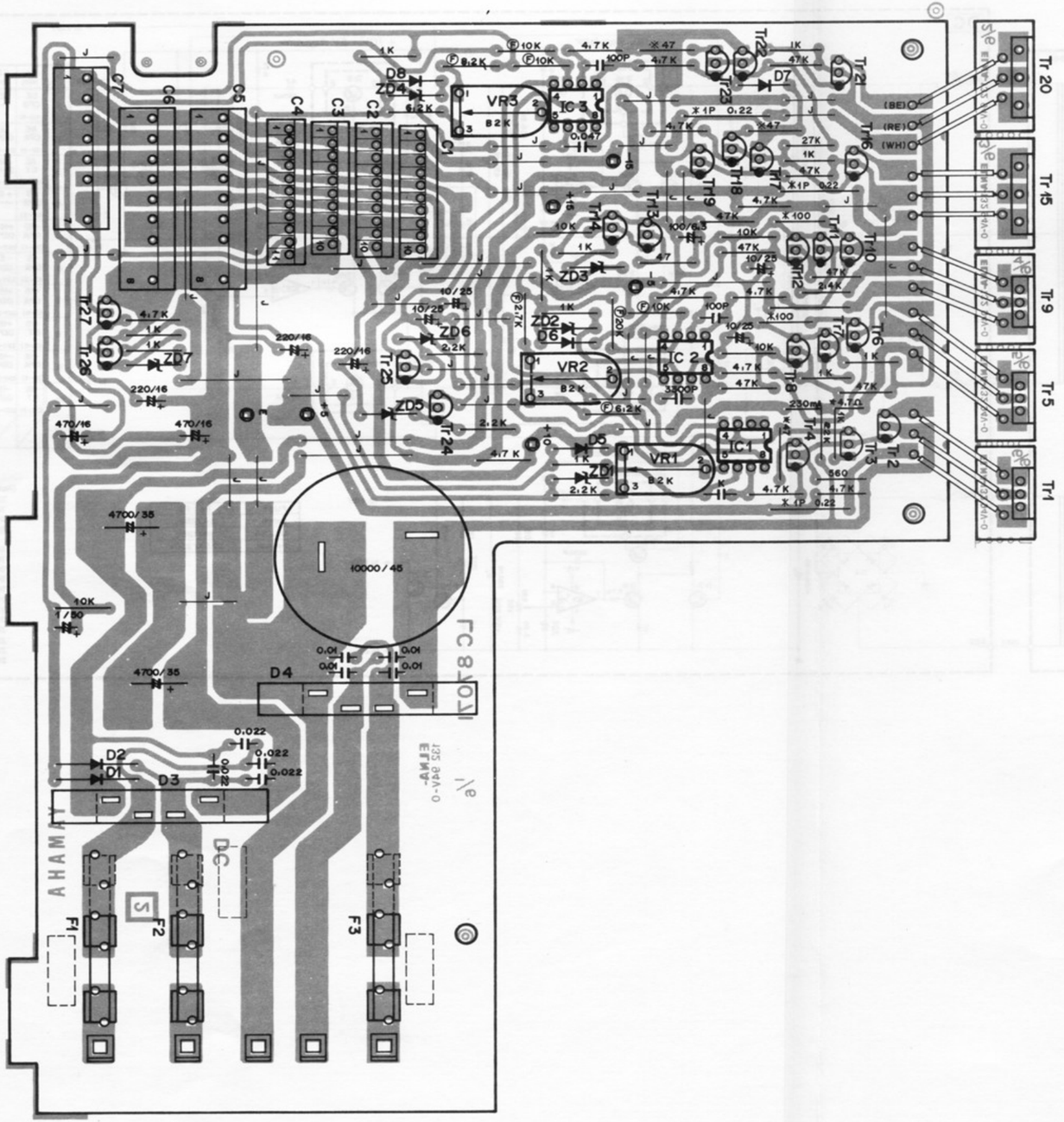


	C1 (10P)	C2 (10P)	C3 (10P)	C4 (11P)	C5 (8P)	C6 (8P)	C7 (7P)	
1	DE CPB (IC6–5)	DE —	DE —	DE CR (IC2–1)	DE CPU (IC4–3)	DE CPU (IC4–4)	PON CPU (IC4–5)	1
2	AE CPA (IC1–3)	AE DIF (IC1–5)	AE —	RYI JK (IC1–7)	AE MOY (IC4–3)	AE MOX (IC6–3)	+10 CPU (IC4–7)	2
3	AE ET (IC3–4)	AE DIF (IC7–6)	AE LF (IC3–2)	AE LF (IC3–4)	AE MOY (IC4–4)	AE MOX (IC6–4)	–5 CPU (IC4–6)	3
4	+5 CPB (IC6–3)	+5 —	+5 —	AE JK (IC2–5)	+5 CPU (IC4–5)	+5 CPU (IC4–2)	+15 MOY (IC4–1)	4
5	+10 CPA (IC1–1)	+10 DIF (IC7–1)	+10 LF (IC3–6)	+5 CR (IC2–3)	+10 MOY (IC4–8)	+10 MOX (IC4–8)	+15 MOX (IC4–1)	5
6	–5 CPA (IC1–2)	–5 DIF (IC7–2)	–5 LF (IC3–5)	+10 LF (IC13–9)	–5 MOY (IC4–7)	–5 MOX (IC4–7)	–15 MOY (IC4–8)	6
7	+15 CPA (IC1–5)	+15 DIF (IC7–3)	+15 —	–5 LF (IC13–7)	+15 MOY (IC4–2)	+15 MOX (IC4–2)	–15 MOX (IC4–8)	7
8	+15 ET (IC3–6)	+15 DIF (IC7–4)	+15 LF (IC3–4)	+15 LF (IC13–6)	–15 MOY (IC4–6)	–15 MOX (IC4–6)		8
9	–15 CPA (IC1–4)	–15 DIF (IC7–7)	–15 —	+15 JK (IC2–4)				9
10	–15 ET (IC3–3)	–15 DIF (IC7–8)	–15 LF (IC3–1)	–15 LF (IC13–2)				10
11				–15 JK (IC2–6)				11

(Notes)
IC1~3 : NJM4558
Tr1,5 : 2SD526
Tr2,16 : 2SD438
Tr3,4,6~8,13,14,17~19,24,26,27 : 2SC1815
Tr9 : 2SB596
Tr10~12,22,23,25 : 2SA1015
Tr15 : 2SD718
Tr20 : 2SB688
Tr21 : 2SB560
D1,2 : W03B
D3,4 : S82
D5~8 : 1N1555
ZD1,7 : RD3.6EB1
ZD2,4 : RD5.6EB3
ZD3 : 0Z6.8A
ZD5,6 : RD15EB3

FUSE	F1 , F2 , F3
Japan	3A / 250V
UL,CSA	3A/125V
General	T2.5A / 250V

DC Circuit Board & Wiring



C1

Pin No.	Pin Name	Wire Color	Destination
1	DE	BL	CPB-DE (C6-5)
2	AE	BL	CPA-GND (C1-3)
3	AE	BL	ET-E (C3-4)
4	+5	RE	CPB-+5 (C6-3)
5	+10	GR	CPA-+10 (C1-1)
6	–5	BE	CPA- –5 (C1-2)
7	+15	BR	CPA-+15 (C1-5)
8	+15	BR	ET-+15 (C3-5)
9	–15	YE	CPA- –15 (C1-4)
10	–15	YE	ET- –15 (C3-3)

C2

Pin No.	Pin Name	Wire Color	Destination
1	DE	–	–
2	AE	BL	DIF-AE (C17-5)
3	AE	BL	DIF-AE (C17-6)
4	+5	–	–
5	+10	GR	DIF-+10 (C17-1)
6	–5	BE	DIF- –5 (C17-2)
7	+15	BR	DIF-+15 (C17-3)
8	+15	BR	DIF-+15 (C17-4)
9	–15	YE	DIF- –15 (C17-7)
10	–15	YE	DIF- –15 (C17-8)

C3

Pin No.	Pin Name	Wire Color	Destination
1	DE	–	–
2	AE	–	–
3	AE	BL	LF-GND (C3-2)
4	+5	–	–
5	+10	GR	LF-+10 (C3-6)
6	–5	BE	LF- –5 (C3-5)
7	+15	–	–
8	+15	BR	LF-+15 (C3-4)
9	–15	–	–
10	–15	YE	LF- –15 (C3-1)

C4

Pin No.	Pin Name	Wire Color	Destination
1	DE	BL	CR-DE (C2-1)
2	RY1	WH	JK-RY1 (C1-7)
3	AE	BL	LF-GND (C13-4)
4	AE	BL	JK-GND (C2-6)
5	+5	RE	CR-+5 (C2-3)
6	+10	GR	LF-+10 (C13-9)
7	–5	BE	LF- –5 (C13-7)
8	+15	BR	LF-+15 (C13-6)
9	+15	BR	JK-+15 (C2-5)
10	–15	YE	LF- –15 (C13-2)
11	–15	YE	JK- –15 (C2-4)

C5

Pin No.	Pin Name	Wire Color	Destination
1	DE	BL	CPU-DE (C4-3)
2	AE	BL	MOY-AE (C4-3)
3	AE	BL	MOY-AE (C4-4)
4	+5	RE	CPU-+5 (C4-1)
5	+10	GR	MOY-+10 (C4-8)
6	–5	BE	MOY- –5 (C4-7)
7	+15	BR	MOY-+15 (C4-2)
8	–15	YE	MOY- –15 (C4-6)

C6

Pin No.	Pin Name	Wire Color	Destination
1	DE	BL	CPU-DE (C4-4)
2	AE	BL	MOX-AE (C4-3)
3	AE	BL	MOX-AE (C4-4)
4	+5	RE	CPU-+5 (C4-2)
5	+10	GR	MOX-+10 (C4-8)
6	–5	BE	MOX- –5 (C4-7)
7	+15	BR	MOX-+15 (C4-2)
8	–15	YE	MOX- –15 (C4-6)

C7

Pin No.	Pin Name	Wire Color	Destination
1	PON	OR	CPU-PON (C4-5)
2	+10	GR	CPU-+10 (C4-7)
3	–5	BE	CPU- –5 (C4-6)
4	+15	BR	MOY-+15 (C4-1)
5	+15	BR	MOX-+15 (C4-1)
6	–15	YE	MOY- –15 (C4-5)
7	–15	YE	MOX- –15 (C4-5)

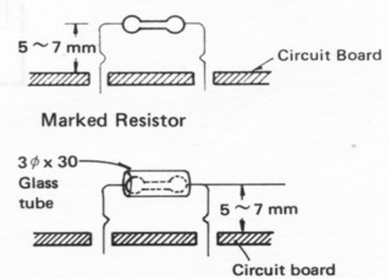
Notes)

1. Circuit Board : LC87071 [2]
2. Transistor
   - Tr1, 5 : 2SD526 (O, Y)
   - Tr2, 16 : 2SD438
   - Tr3, 4, 6 ~ 8, 13, 14, 17 ~ 19, 24, 26, 27 : 2SC1815 (O, Y)
   - Tr9 : 2SB596 (O, Y)
   - Tr10 ~ 12, 22, 23, 25 : 2SA1015 (O, Y)
   - Tr15 : 2SD718 (R, O)
   - Tr20 : 2SB688 (R, O)
   - Tr21 : 2SB560
3. IC
   - IC1 ~ 3 : NJM4558DV
4. Diode
   - D1, 2 : W03B
   - D3, 4 : 15B2
   - D5 ~ 8 : 1S1555
5. Zener Diode
   - ZD1, 7 : RD3.6EB1
   - ZD2, 4 : RD5.6EB3
   - ZD3 : 02Z6.8A
   - ZD5, 6 : RD15EB3
6. Capacitor
   - K marked : 1000P (Ceramic Capacitor)
7. Fuse

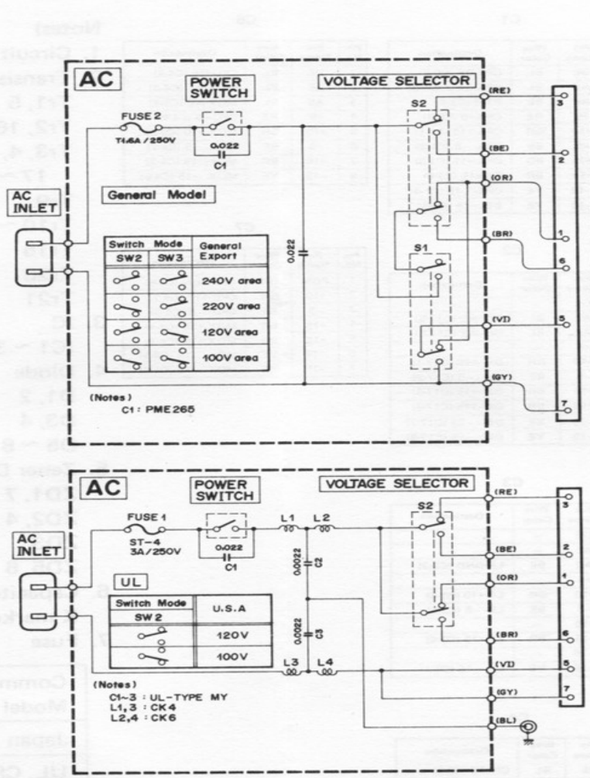
Common Model	NA No.	F1, 2, 3
Japan	NA80828	ⓥ 3.15A, 250V
UL, CSA	NA80829	ⓤⓛ 3.15A, 125V
North European	NA80830	Ⓢ T2.5A, 250V

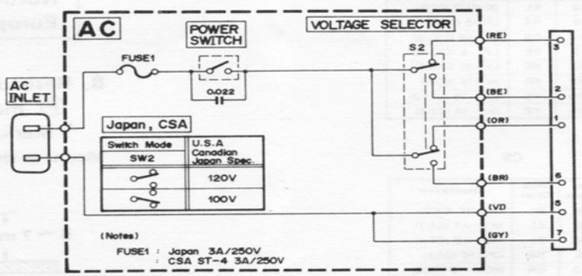
8. Resistor
   - Ⓕ marked : Metal Film Resistor (± 1%)
   - * Marked Resistor

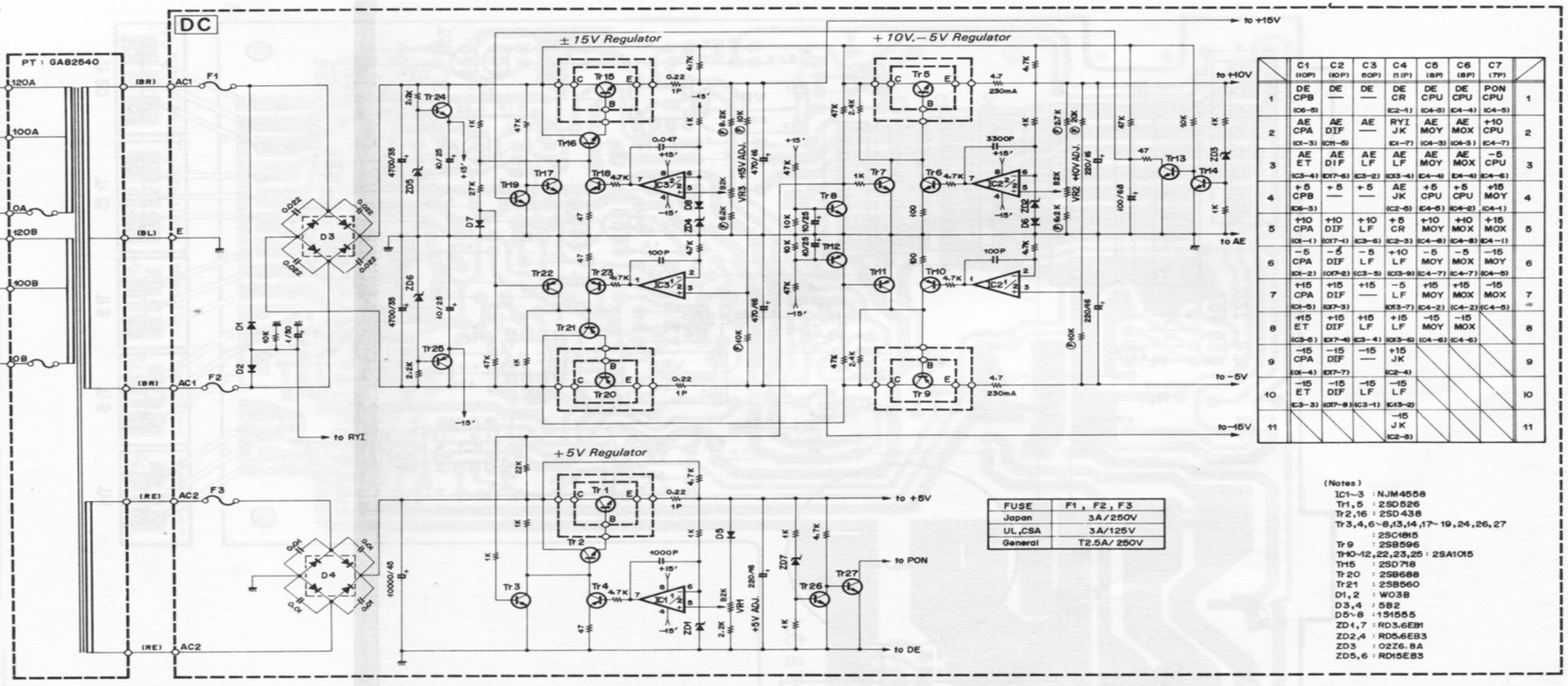
Mount as shown below



AC Circuit Diagram

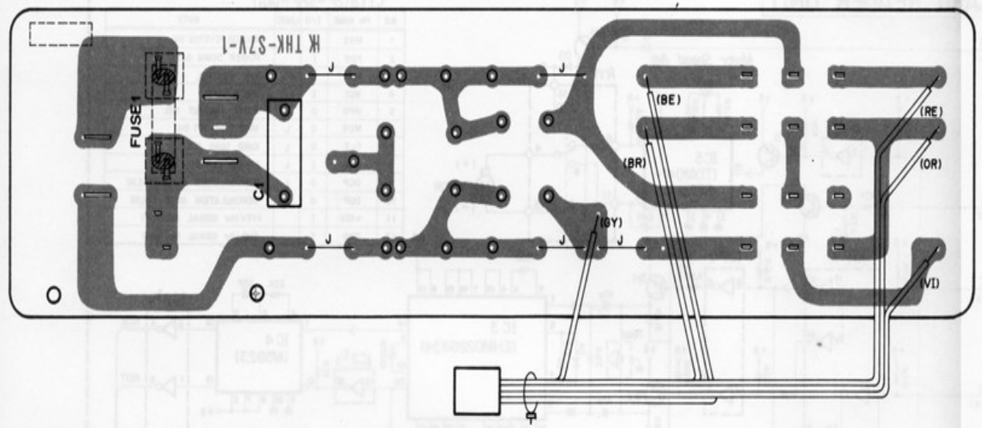






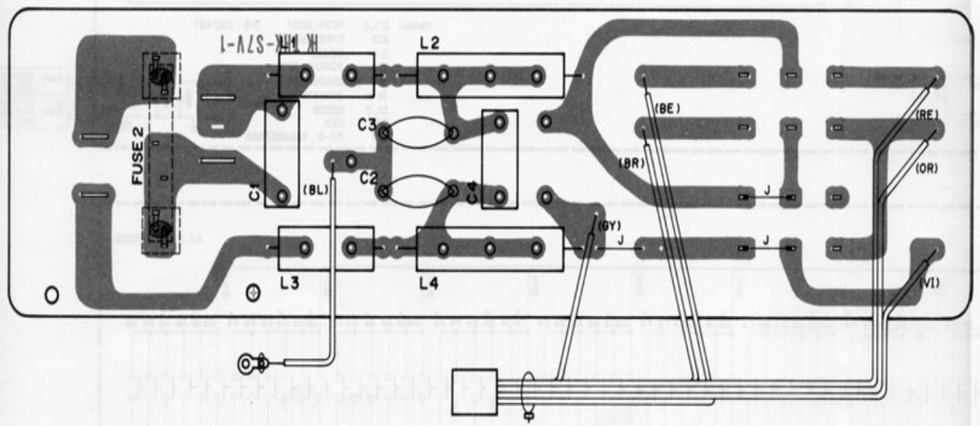
	C1 (10P)	C2 (10P)	C3 (10P)	C4 (11P)	C5 (8P)	C6 (8P)	C7 (7P)	
1	DE CPB (C6-5)	DE —	DE —	DE CR (C2-1)	DE CPU (C4-3)	DE CPU (C4-4)	PON CPU (C4-5)	1
2	AE CPA (C1-3)	AE DIF (C11-5)	AE —	RYI JK (C1-7)	AE MOY (C4-3)	AE MOX (C4-3)	+10 CPU (C4-7)	2
3	AE ET (C3-4)	AE DIF (C17-6)	AE LF (C3-2)	AE LF (C13-4)	AE MOY (C4-4)	AE MOX (C4-4)	−5 CPU (C4-6)	3
4	+5 CPB (C6-3)	+5 —	+5 —	AE JK (C2-5)	+5 CPU (C4-5)	+5 CPU (C4-2)	+15 MOY (C4-1)	4
5	+10 CPA (C1-1)	+10 DIF (C17-4)	+10 LF (C3-6)	+5 CR (C2-3)	+10 MOY (C4-8)	+10 MOX (C4-8)	+15 MOX (C4-1)	5
6	−5 CPA (C1-2)	−5 DIF (C17-2)	−5 LF (C3-5)	+10 LF (C13-9)	−5 MOY (C4-7)	−5 MOX (C4-7)	−15 MOY (C4-5)	6
7	+15 CPA (C1-5)	+15 DIF (C17-3)	+15 —	−5 LF (C13-7)	+15 MOY (C4-2)	+15 MOX (C4-2)	−15 MOX (C4-5)	7
8	+15 ET (C3-5)	+15 DIF (C17-4)	+15 LF (C3-4)	+15 LF (C13-6)	−15 MOY (C4-6)	−15 MOX (C4-6)		8
9	−15 CPA (C1-4)	−15 DIF (C17-7)	−15 —	+15 JK (C2-4)				9
10	−15 ET (C3-3)	−15 DIF (C17-8)	−15 LF (C3-1)	−15 LF (C13-2)				10
11				−15 JK (C2-6)				11

North Enropean



View from the printed pattern side of the circuit board.

US

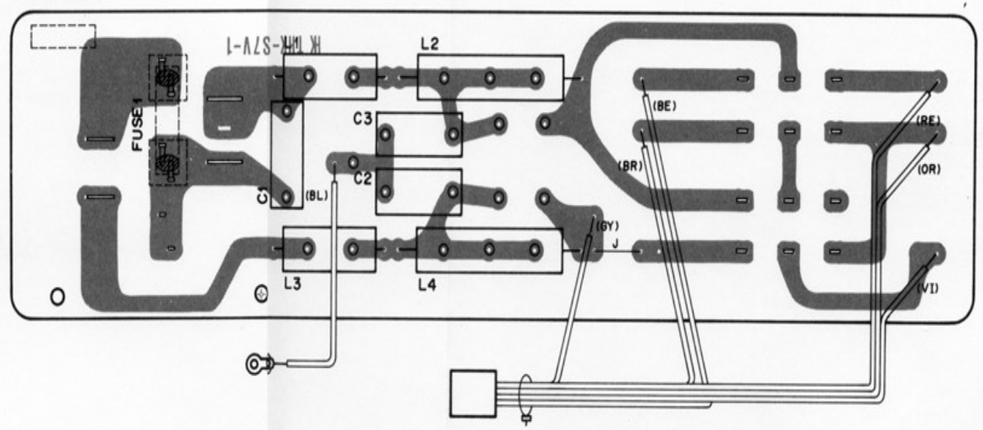


Notes)
1. Circuit Board : LC87260 2
2. Fuse
   Fuse 1 : North European 1.6A 250V KB00074
   Fuse 2 : UL 3.0A 250V KB00265
3. Capacitor
   C1 : 0.022 PME265
   C2 ~ 3 : 0.0022 MY

KEP-NA80833-OZ ⚠
KEP-NA80834-OZ ⚠

AC Circuit Board & Wiring

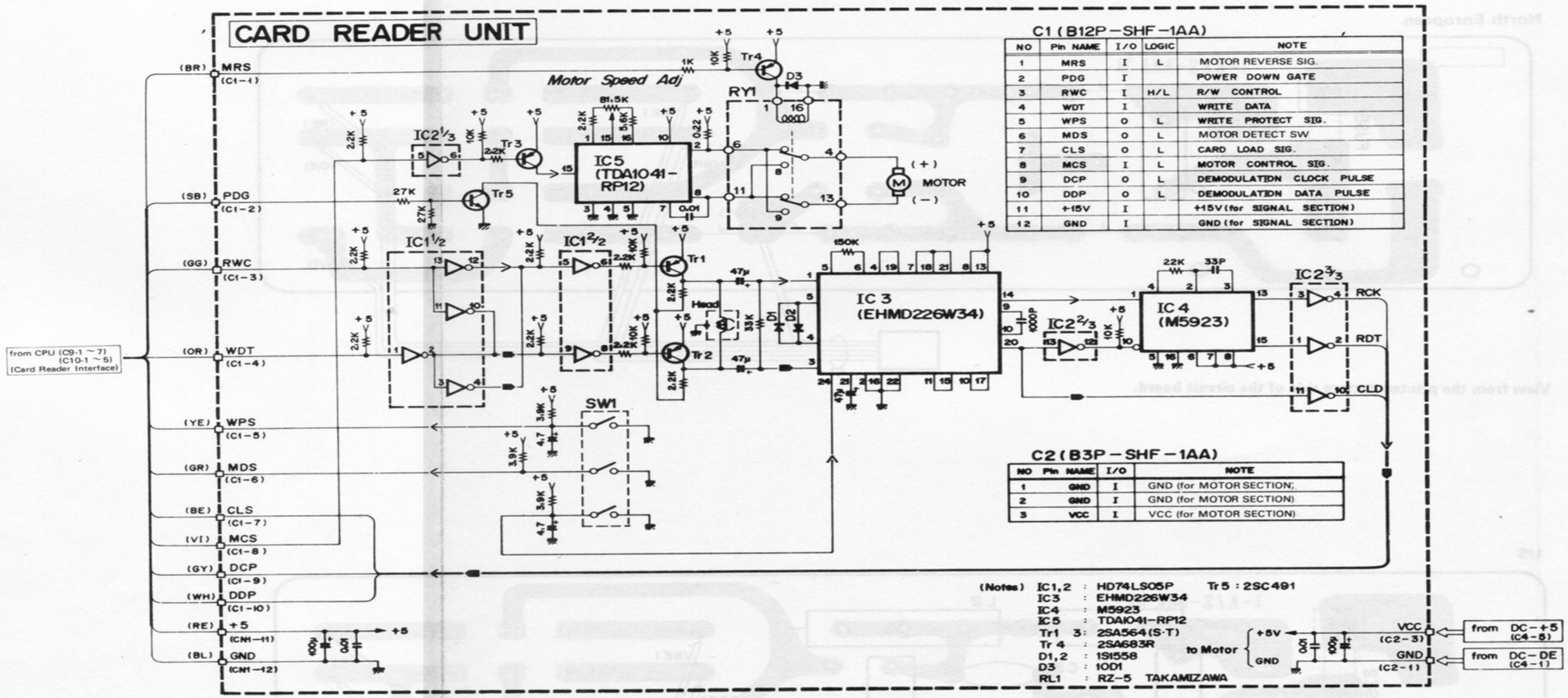
JAPAN CSA.



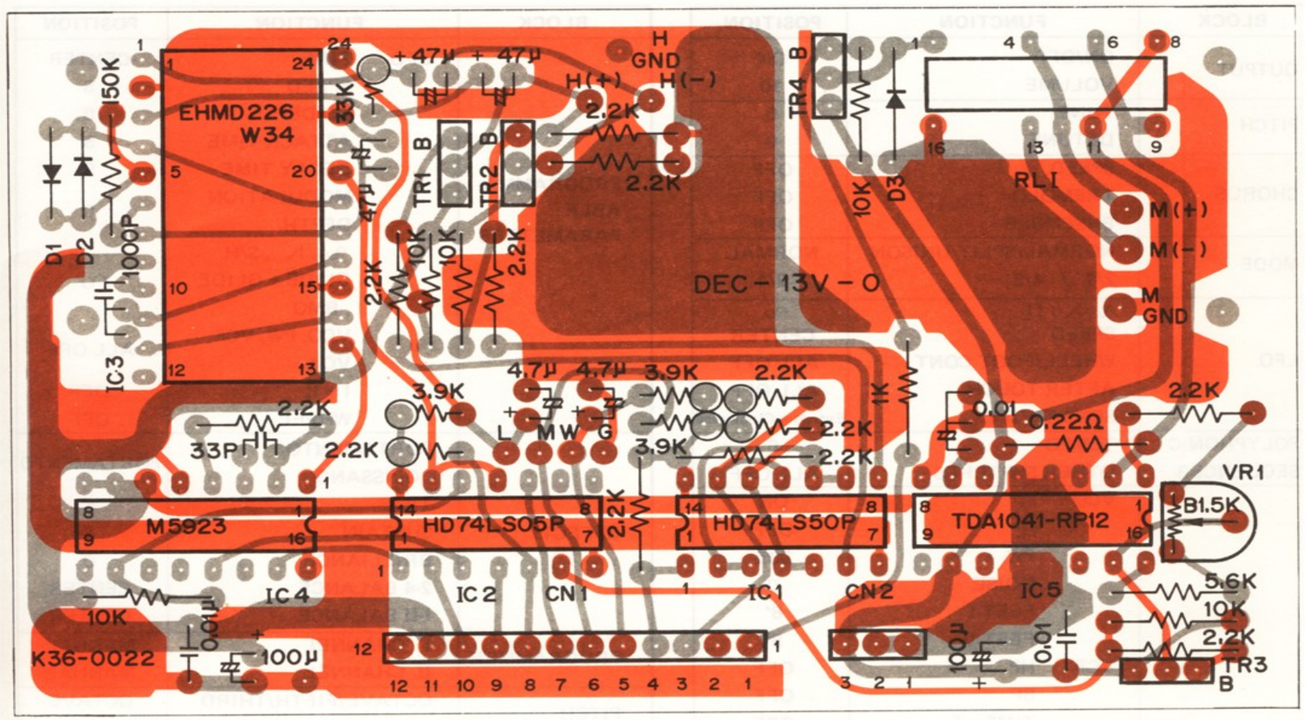
KEP-NA80832-14
KEP-NA10726-14

Notes)
1. Circuit Board : LC87260 2
2. Fuse
   : Japan 3A 250V KB00036
   CSA 3A 250V KB00265
3. Capacitor
   C1 : 0.022 PME265

MK, CR Circuit Diagram



MK, CR Circuit Board & Wiring



C1

Pin No.	Pin Name	Wire Color	Destination
1	MRS	BR	CPU-MRS (C9-5)
2	PON	SB	CPU-PON (C9-3)
3	RWC	GG	CPU-RWC (C9-6)
4	WDT	OR	CPU-WDT (C9-7)
5	WPS	YE	CPU-WPS (C10-3)
6	MDS	GR	CPU-MDS (C10-1)
7	CLS	BE	CPU-CLS (C10-2)
8	MCS	VI	CPU-MCS (C9-4)
9	DCP	GY	CPU-DCP (C9-2)
10	DDP	WH	CPU-DDP (C9-1)
11	+5	RE	CPU-+5 (C10-5)
12	DE	BL	CPU-DE (C10-4)

C2

Pin No.	Pin Name	Wire Color	Destination
1	DE	BL	DC-DE (C4-1)
2	DE	–	–
3	+5	RE	DC-+5 (C4-5)

C1

Pin No.	Pin Name	Wire Color	Destination
1	3	WH	CPA-XLR– (C2-3)
2	–	–	–
3	2	RE	CPA-XLR+ (C2-4)

C1

Pin No.	Pin Name	Wire Color	Destination
1	N1	BR	CPU-CL (C7-7)
2	N2	RE	CPU-C# (C7-1)
3	N3	OR	CPU-D (C7-2)
4	N4	YE	CPU-D# (C7-3)
5	N5	GR	CPU-E (C7-4)
6	N6	BE	CPU-F (C7-5)
7	N7	VI	CPU-F# (C7-6)

C1

Pin No.	Pin Name	Wire Color	Destination
1	4	BL	LF-BTP (C24-7)
2	1	BR	LF-BDN (C26-3)
3	2	RE	LF-BCT (C26-1)
4	3	OR	LF-BUP (C26-2)

C2

Pin No.	Pin Name	Wire Color	Destination
1	B11	BR	CPU-KBD0 (C8-1)
2	B12	RE	CPU-KBD1 (C8-2)
3	B21	OR	CPU-KBD2 (C8-5)
4	B22	YE	CPU-KBD3 (C8-4)
5	B31	GR	CPU-KBD4 (C8-3)
6	B32	BE	CPU-KBD5 (C8-6)
7	B41	VI	CPU-KBD6 (C8-7)
8	B42	GY	CPU-KBD7 (C8-8)
9	B51	WH	CPU-KBD8 (C8-9)
10	B52	GG	CPU-KBD9 (C8-10)

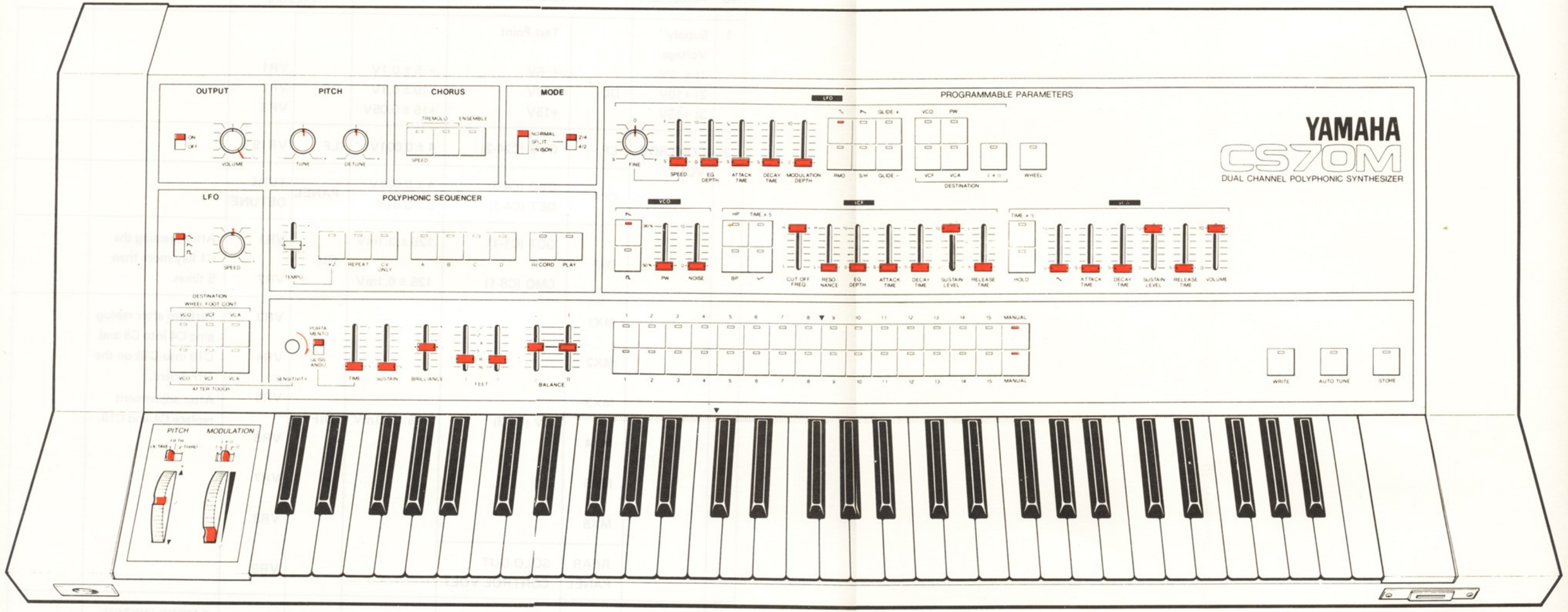
C1

Pin No.	Pin Name	Wire Color	Destination
1	3	RE	LF-WUP (C24-9)
2	2	BR	LF-WCT (C24-8)
3	1	BL	LF-WDN (C24-10)

PANEL SETTING

BLOCK	FUNCTION	POSITION
OUTPUT	ON/OFF	ON
	VOLUME	10
PITCH	TUNE	0
	DETUNE	0
CHORUS	SPEED	OFF
	TREMOLO	OFF
	ENSEMBLE	OFF
MODE	NORMAL/SPLIT/UNISON	NORMAL
	2/4 / 4/2	2/4
LFO	∿/⋀/⊓	∿
	SPEED	CENTER
	WHEEL/FOOT CONT.	ALL OFF
	AFTER TOUCH	ALL OFF
	SENSITIVITY	Extreme Clockwise
POLYPHONIC SEQUENCER	TEMPO	0
	OTHER SWITCHES	ALL OFF
PROGRAMM-ABLE PARAMETERS	VCO ⋀	ON
	⊓	OFF
	PW	50%
	NOISE	0
	FEET-I	8′
	FEET-II	8′
	VCF HP	OFF
	BP	OFF
	TIME x 5	OFF
	⌐	OFF
	CUT OFF FREQUENCY	H
	RESONANCE	L
	EG DEPTH	0
	ATTACK TIME	S
	DECAY TIME	S
	SUSTAIN LEVEL	10
	RELEASE TIME	S
	VCA TIME x 5	OFF
	HOLD	OFF
	∿	0
	ATTACK TIME	S
	DECAY TIME	S
	SUSTAIN LEVEL	10
	RELEASE TIME	S
	VOLUME	10

BLOCK	FUNCTION	POSITION
PROGRAMMA-ABLE PARAMETERS	LFO FINE	CENTER
	SPEED	S
	EG DEPTH	0
	ATTACK TIME	S
	DECAY TIME	S
	MODULATION DEPTH	0
	∿ , ⋀ , S/H	∿
	GLIDE + GLIDE , RMO	ALL OFF
	VCO, PW, VCF, VCA	OFF
	I + II	OFF
	WHEEL	
EFFECT	PORTAMENTO/ GLISSAND	PORTAMENTO
	TIME	S
	SUSTAIN	S
	BRILLIANCE	0
	2-4 BALANCE	CENTER
	I-II BALANCE	CENTER
PROGRAMMER	I CHANNEL	MANUAL
	II CHANNEL	MANUAL
PITCH	OCTAVE/FIFTH/THIRD	OCTAVE
	WHEEL	0
MODULATION	I / I + II / II	I + II
	WHEEL	0


OUTPUT
ON
OFF
VOLUME
PITCH
TUNE
DETUNE
CHORUS
TREMOLO
ENSEMBLE
SPEED
MODE
NORMAL
SPLIT
UNISON
2/4
4/2
LFO
SPEED
DESTINATION
WHEEL FOOT CONT
VCO
VCF
VCA
AFTER TOUCH
POLYPHONIC SEQUENCER
TEMPO
x2
REPEAT
CV ONLY
A
B
C
D
RECORD
PLAY
PROGRAMMABLE PARAMETERS
LFO
FINE
SPEED
EG DEPTH
ATTACK TIME
DECAY TIME
MODULATION DEPTH
RMO
S/H
GLIDE +
GLIDE −
VCO
PW
VCF
VCA
DESTINATION
WHEEL
PW
NOISE
HP
BP
TIME x 5
CUT OFF FREQ
RESO-NANCE
EG DEPTH
ATTACK TIME
DECAY TIME
SUSTAIN LEVEL
RELEASE TIME
HOLD
VOLUME
YAMAHA
CS70M
DUAL CHANNEL POLYPHONIC SYNTHESIZER
PORTA MENTO
SENSITIVITY
TIME
SUSTAIN
BRILLIANCE
FEET
BALANCE
MANUAL
WRITE
AUTO TUNE
STORE
PITCH
MODULATION

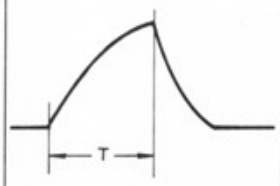
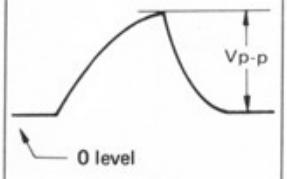
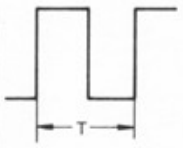
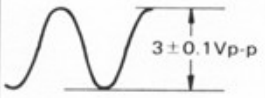
TUNING

No.	Adjustment	Measurement		Value	Adjustment Location		Conditions	Remarks
1	Supply Voltage 1) + 5V 2) +10V 3) +15V	DC	Test Point + 5V +10V +15V	+ 5 ± 0.1V +10 ± 0.1V +15 ± 0.05V	DC	VR1 VR2 VR3		
2	CONTROL VOLT	LF	CVO (C24-2)	4 ± 0.001V	LF	VR19		
		CPA	CVO (C4-3) DET (C4-1)	4 ± 0.001V 0 ± 0.01V	PANEL	TUNE DETUNE		
		DIF	OCT (C1-1) CMO (C8-1)	125 ± 0.1mV 125 ± 0.1mV	DIF	VR1 VR2	After pressing the C1 key more than 6 times.	
		MX1 MX2 MX3 MX4 MX5 MX6	CV (C1-3)	125 ± 0.1mV	DIF	VR3 VR4 VR5 VR6 VR7 VR8	Perform after replugging C4 into C5 and C19 into C18 on the DIF board. After adjustment replace C4 and C19.	
		REAR PANEL	SOLO OUT CONTROL VOLT			VR9		
3	TUNING 1) C6 KEY 2) C1 KEY	REAR PANEL	MIXED/1	C8 ± 1 ¢ C3 ± 1 ¢	MX1-6 MY1-6	VR1 VR6	• MODE SWITCH .....NORMAL • PROGRAM SWITCH...MANUAL • FEET.....2' • VCO ⅄ .⎍..OFF • VCA ∿.....10	Perform when LEDs MX1-6, MY1-6 are lit.

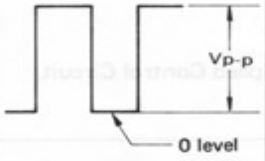
CIRCUIT ORGANIZATION

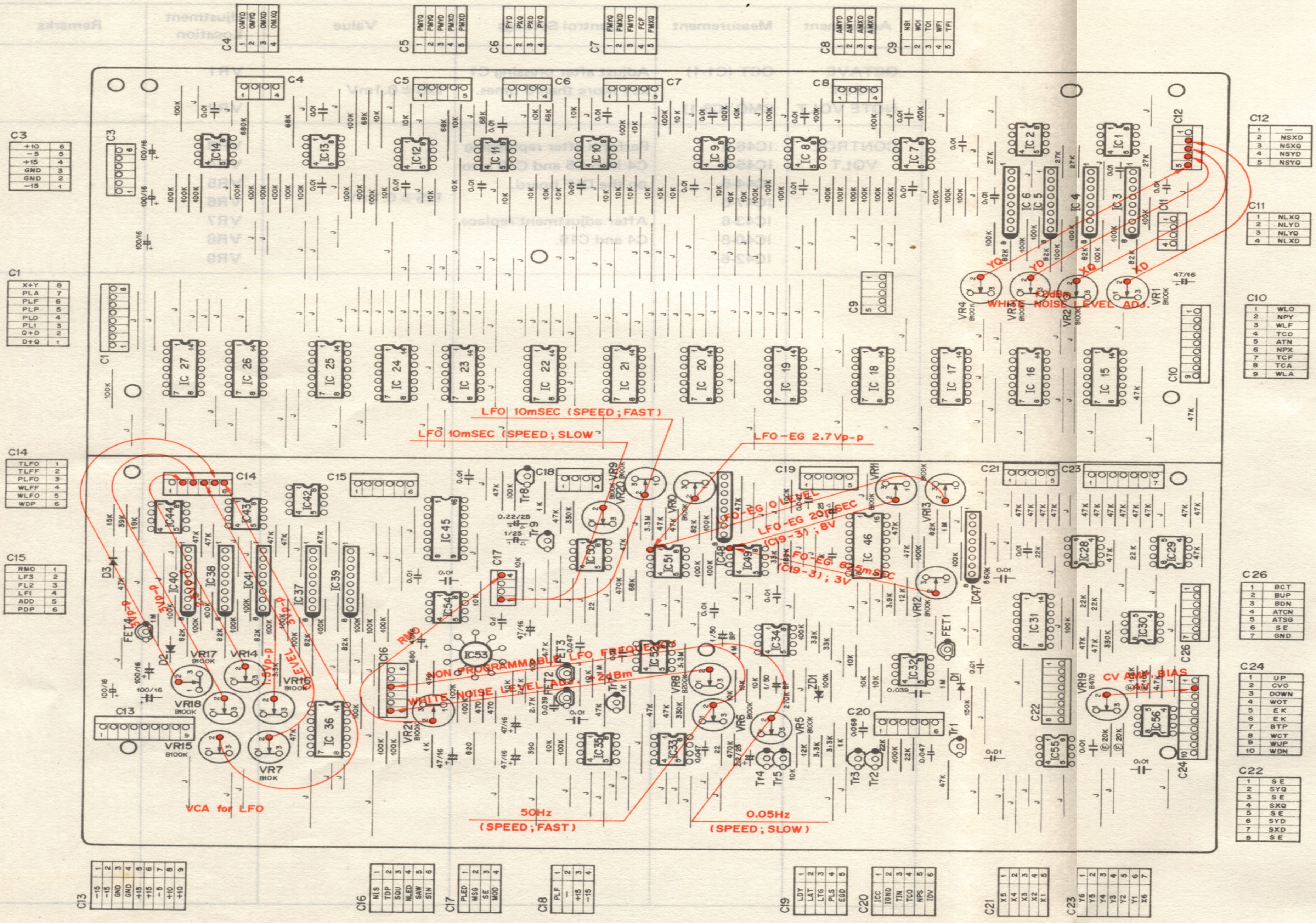
Board Name	Circuit Organization
CPA	D + Q Mixing Circuit Ring Modulator Control Circuit D + Q Mixing Level Circuit X + Y Balance Circuit Ensemble Control Circuit EXP Circuit Output Amplifier Circuit Tune/Detune Circuits LFO Control Circuit Brilliance Control Circuit, Sustain Circuit Aftertouch Sense Cricuit Switch Matrix Circuit LED Matrix Circuit
CPB	LED Matrix Switch Matrix Programmable LFO Speed Control Circuit, Display Circuit
M	VCO Circuit WSC Circuit VCF Circuit VCA Circuit VCF-EG Circuit VCA-EG Circuit
MO	Bus Circuit
CPU	Microprocessor and Peripheral Circuit Z-80 CPU Clock Circuit Interrupt Circuit ROM RAM Initial Clear Circuit RAM Battery Backup Circuit Card Reader Interface Panel LED Output Ports Panel Switch Input Ports Keyboard Inputs Ports TTL—C-MOS Level Shifter Circuits External Keycode Input Interface Auto-tune VCO Cycle Measurement Circuit

Board Name	Circuit Organization
DIF	Data Latch Circuit Channel I, II Control Voltage Generator Circuit D-A Convertor Sample and Hold Circuit Sustain Control Circuit Keyboard Trigger Circuit D-A Convertor Sample and Hold Circuit Trigger Latch Circuit
LF	Programmable LFO Circuit Ring Modulator Circuit Signal Mixing Circuit Standard CV Generator Circuit White Noise Generator Circuit White Noise VCA Circuit LFO Signal Gate and Mixing Amplifier Circuit
JK	Headphone Amplifier Circuit Output Muting Circuit Expression Pedal Drive Circuit x 3 Aftertouch Sense Circuit CV Voltage Divider Circuit
ET	Input LPF Circuit Modulator Low-Frequency Generator Circuit BBD Clock Generator Circuit BBD Circuit Output LPF Circuit Amplitude Modulator Circuit
DC	+15V Regulator Circuit −15V Regulator Circuit +10V Regulator Circuit −5V Regulator Circuit +5V Regulator Circuit Power Supply ON Detector Circuit (PON) Relay Drive Signal Generator (RYI)

Adjustment	Measurement	Control Settings	Value	Adjustment Location	Remarks
Programmable LFO-EG		GLIDE + ...ON MODULATION DEPTH .....10 Set LAT (C19-2) voltage with Attack Time Lever.			Note: Both VR11 and VR12 attect ATTACK TIME adjustment each other.
	IC49-1	1) Set LAT to 8 ± 0.1V, KEY ON	T = 20 ± 2mSEC	VR11	If the attack time is longer than 625 mSec adjust VR12 so that the attack time is slightly longer. If shorter, adjust VR12 so that the attack time is slightly shorter. Repeat steps 1) and 2).
		2) Set LAT to 3 ± 0.1V, KEY ON	T = 625 ± 50mSEC	VR12	
		FINE ..... 0 EG DEPTH ..... 10 SPEED ..... S			
	IC51-1	3) Set LAT to 8 ± 0.1V, KEY ON	Vp-p = 2.7 ± 0.1Vp-p	VR10	
			0 Level = 0 ± 50mV	VR13	
Programmable LFO Frequency		FINE ..... S			
	PLED (C17-1)	1) SPEED ..... S	T = 10 ± 1SEC	VR20	
		2) SPEED ..... S	T = 10 ± 0.5mSEC	VR9	
Programmable LFO VCA	PLFO (C14-3)	∿ ..... ON MODULATION DEPTH 10		VR18	
Ring Modulator	MOD (C17-4)	SPEED ..... F	Adjust for a sine wave of minimum level	VR21	

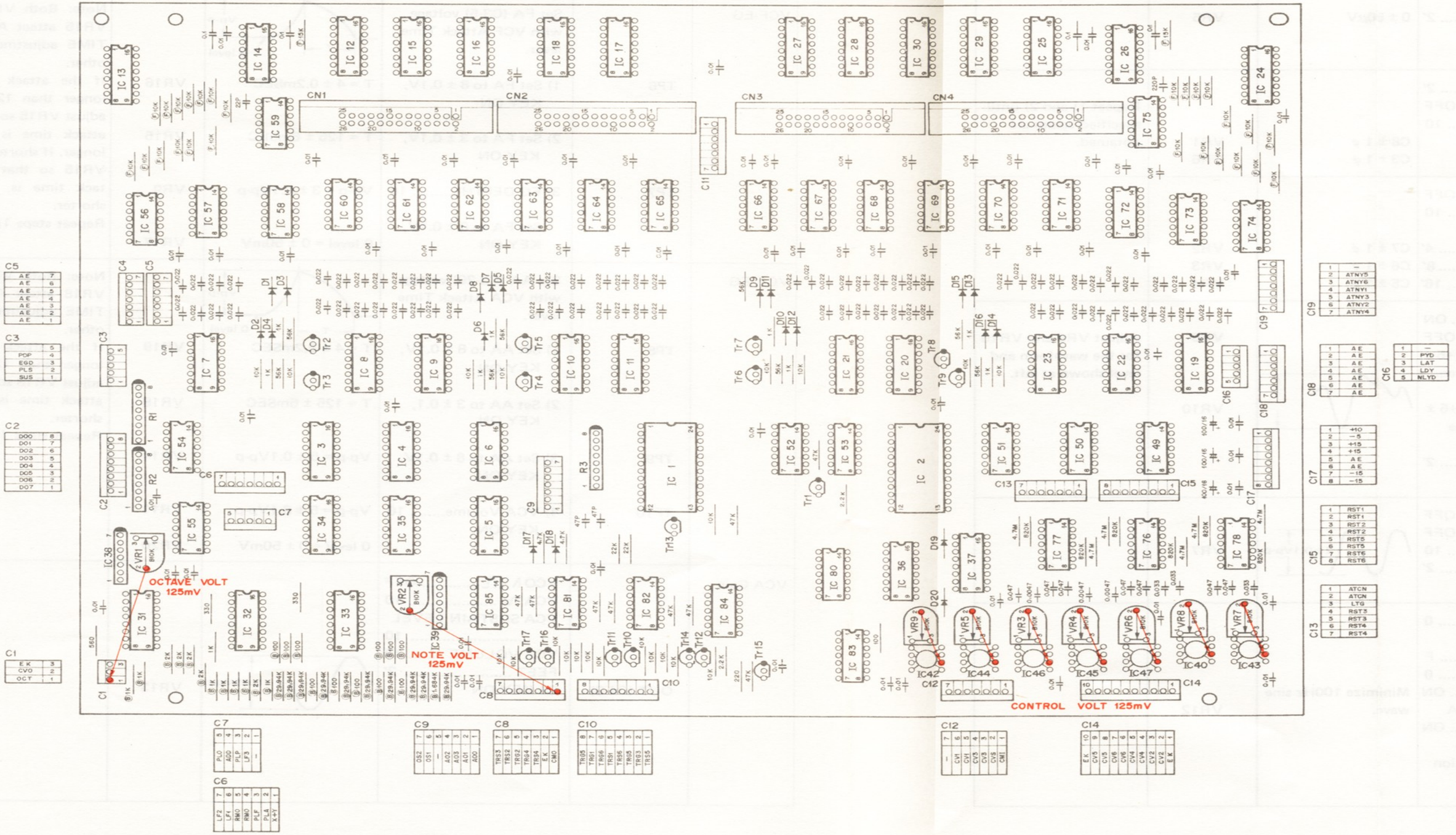
LF CIRCUIT BOARD

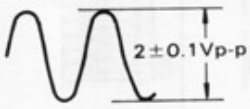
Adjustment	Measurement	Control Settings	Value	Adjustment Location	Remarks
White Noise Level	NIS (C16-1)		+2 ± 0.5dBm	VR8	
White Noise VCA Gain	NSXQ (C12-3) NSXD (C12-2) NSYQ (C12-5) NSYD (C12-4)	NOISE 10	+2 ± 0.5dBm	VR2 VR1 VR4 VR3	
CV Amp. Bias Voltage	CVO (C24-2)		+4 ± 0.001V	VR19	
Non-Programmable LFO Frequency	NLED (C16-4)	1) SPEED ..... S 2) SPEED ..... F	0.05 ± 0.005Hz 50 ± 1Hz	VR5 VR6	
Non-Programmable LFO VCA Gain		SPEED ..... F Waveform Switch.... ⎍ SENSITIVITY.... MAX			
	TLFF (C14-2) TLFO (C14-1)	1) Press key strongly.	Vp-p = 2.5 ± 0.1Vp-p Vp-p = 1.5 ± 0.1Vp-p 0 level = 0 ± 50mV	VR14 VR16 VR7	
	WLFF (C14-4)	2) Set Modulation wheel to Max.	Vp-p = 3 ± 0.1Vp-p	VR15	
	WLFO (C14-5)		Vp-p = 3 ± 0.1Vp-p	VR17	


LFO 10mSEC (SPEED; FAST)
LFO 10mSEC (SPEED; SLOW)
LFO-EG 2.7Vp-p
LFO-EG 0 LEVEL
LFO-EG 20mSEC (C19-3); 8V
LFO-EG 6.5mSEC (C19-3); 3V
NON PROGRAMMABLE LFO FREQUENCY
WHITE NOISE LEVEL ADJ.
WHITE NOISE LEVEL ADJ.
CV AMP BIAS
VCA for LFO
50Hz
(SPEED; FAST)
0.05Hz
(SPEED; SLOW)
YQ
YD
XQ
XD

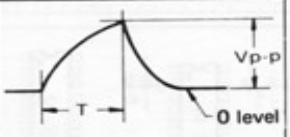
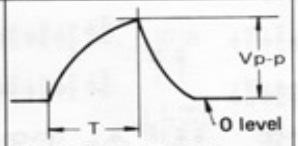
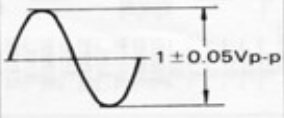
DIF CIRCUIT BOARD

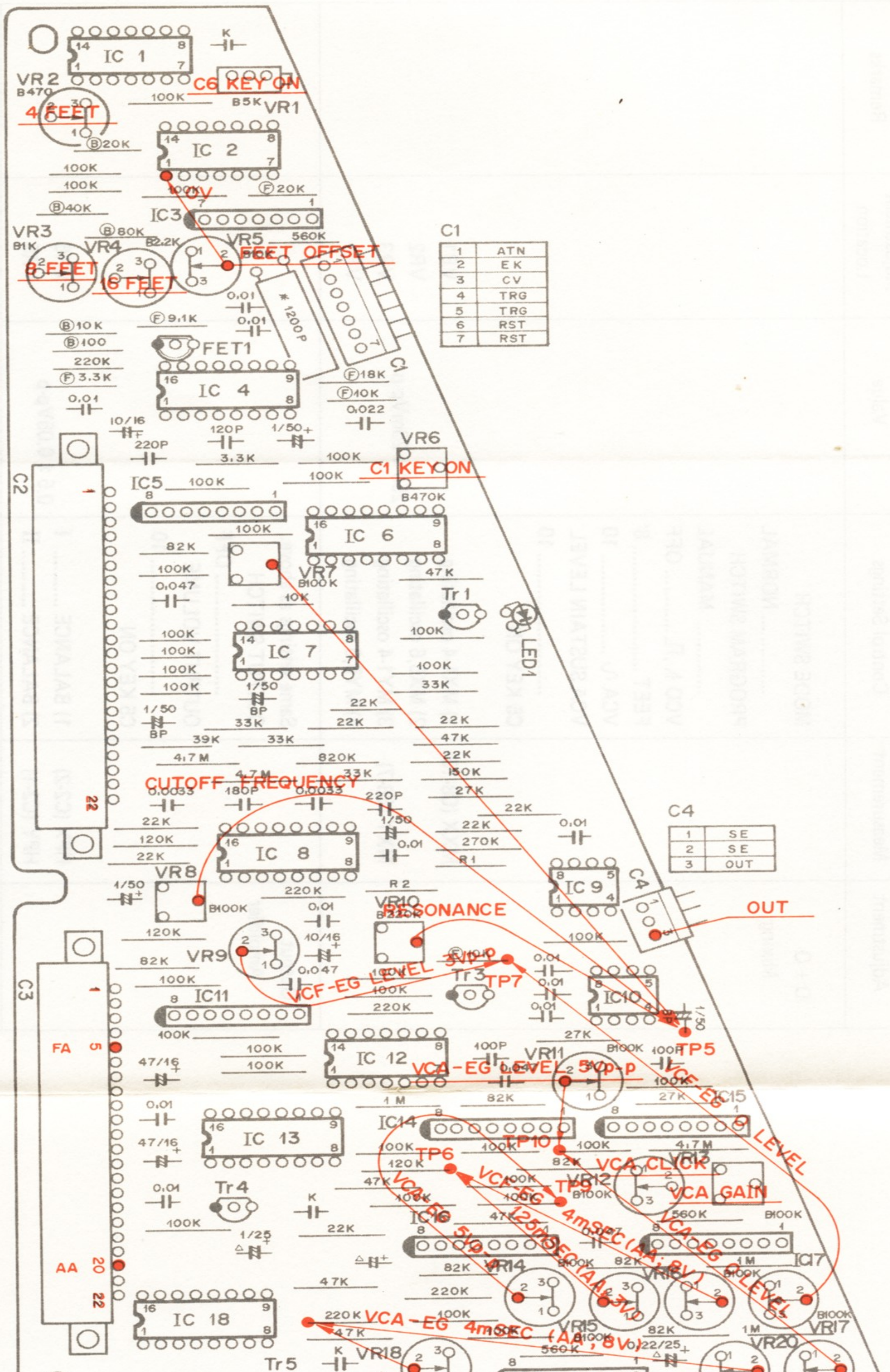
Adjustment	Measurement	Control Settings	Value	Adjustment Location	Remarks
OCTAVE VOLT NOTE VOLT	OCT (C1-1) CMO (C8-1)	Adjust after pressing C1 key more than 6 times.	125 ± 0.1mV	VR1 VR2	
CONTROL VOLT	IC46-6 IC45-6 IC44-6 IC47-6 IC43-6 IC40-6 IC42-6	Perform after replugging C4 into C5 and C19 into on the DIF board. After adjustment replace C4 and C19.	125 ± 0.1mV	VR3 VR4 VR5 VR6 VR7 VR8 VR9	


OCTAVE VOLT
125mV
NOTE VOLT
125mV
CONTROL VOLT 125mV

Adjustment	Measurement	Control Settings	Value	Adjustment Location	Remarks
FEET Switch-over Circuit Offset Voltage	IC2-1	FEET ..... 2′ C1 KEY ON	0 ± 50μV	VR5	
VCO Frequency	OUT (C4-3)	FEET ..... 2′ VCO ∧ ,⊓ ..... OFF VCA ∿ ..... 10 1) C6 KEY ON 2) C1 KEY ON	C8 ± 1 ¢ C3 ± 1 ¢	VR1 VR6	Repeat 1) and 2) until specified values are obtained.
FEET Resistance	OUT (C4-3)	VCO ∧ ,⊓ ..... OFF VCA ∿ ..... 10 C6 KEY ON 1) FEET ..... 4′ 2) FEET ..... 8′ 3) FEET ..... 16′	C7 ± 1 ¢ C6 ± 1 ¢ C5 ± 1 ¢	VR2 VR3 VR4	
CUT OFF Frequency RESONANCE	TP5	VCO ∧ ..... ON VCO ⊓ ..... OFF Set FRQ (C2-19) to +5 ± 0.1V with Cutoff Freq. lever. Set RES (C2-22) to +5 ± 0.1V with Resonance lever. FEET ..... 2′ C3 KEY ON		VR8 VR10	Adjust VR9 and VR10 for the waveform and level shown at left.
Sine Wave Level	TP5	VCO ∧ ..... OFF VCO ⊓ ..... OFF VCA ∿ ..... 10 FEET ..... 2′ C4 KEY ON		VR7	
VCA Click	OUT (C4-3)	VCA ∿ ..... 0 Programmable LFO SPEED ..... F FINE ..... 0 ∿ ..... ON DESTINATION VCA ..... ON Set AMD (C3-19) to 2Vp-p with Modulation Depth lever.	Minimize 100Hz sine wave.	VR12	

M CIRCUIT BOARD

Adjustment	Measurement	Control Settings	Value	Adjustment Location	Remarks
VCF-EG		Set FA (C3-5) voltage with VCF Attack Time lever.			Note: Both VR16 and VR15 attect ATTACK TIME adjustment each other.
	TP6	1) Set FA to 8 ± 0.1V, KEY ON	T = 4 ± 0.2mSEC	VR16	If the attack time is longer than 125 mSec adjust VR15 so that the attack time is slightly longer. If shorter, adjust VR15 so that the attack time is slightly shorter. Repeat steps 1) and 2).
		2) Set FA to 3 ± 0.1V, KEY ON	T = 125 ± 6mSEC	VR15	
	TP7	3) EG DEPTH 10	Vp-p = 3 ± 0.1Vp-p	VR9	
		Set FA to 8 ± 0.1V, KEY ON	0 level = 0 ± 50mV	VR17	
VCA-EG		Set AA (C3-20) voltage with VCA Attack Time lever.			Note: Both VR19 and VR18 attect ATTACK TIME adjustment each other.
	TP8	1) Set AA to 8 ± 0.1V, KEY ON	T = 4 ± 0.2mSEC	VR19	If the attack time is longer than 125 mSec adjust VR18 so that the attack time is slightly shorter. Repeat steps 1) and 2).
		2) Set AA to 3 ± 0.1, KEY ON	T = 125 ± 6mSEC	VR18	
	TP9	3) Set AA to 8 ± 0.1V, KEY ON.	Vp-p = 5 ± 0.1Vp-p	VR14	
	TP10	4) VCA Volume..... 10 KEY ON	Vp-p = 5 ± 0.1Vp-p	VR11	
			0 level = 0 ± 50mV	VR20	
VCA Gain		VCO ⅄ ,⎍..... OFF VCA ∿ ..... 10 VCA SUSTAIN LEVEL ..... 10 VCA VOLUME ..... 10 FEET ..... 2'			
	OUT (C4-3)	C4 KEY ON		VR13	



C1

1	ATN
2	EK
3	CV
4	TRG
5	TRG
6	RST
7	RST

C4

1	SE
2	SE
3	OUT

C2

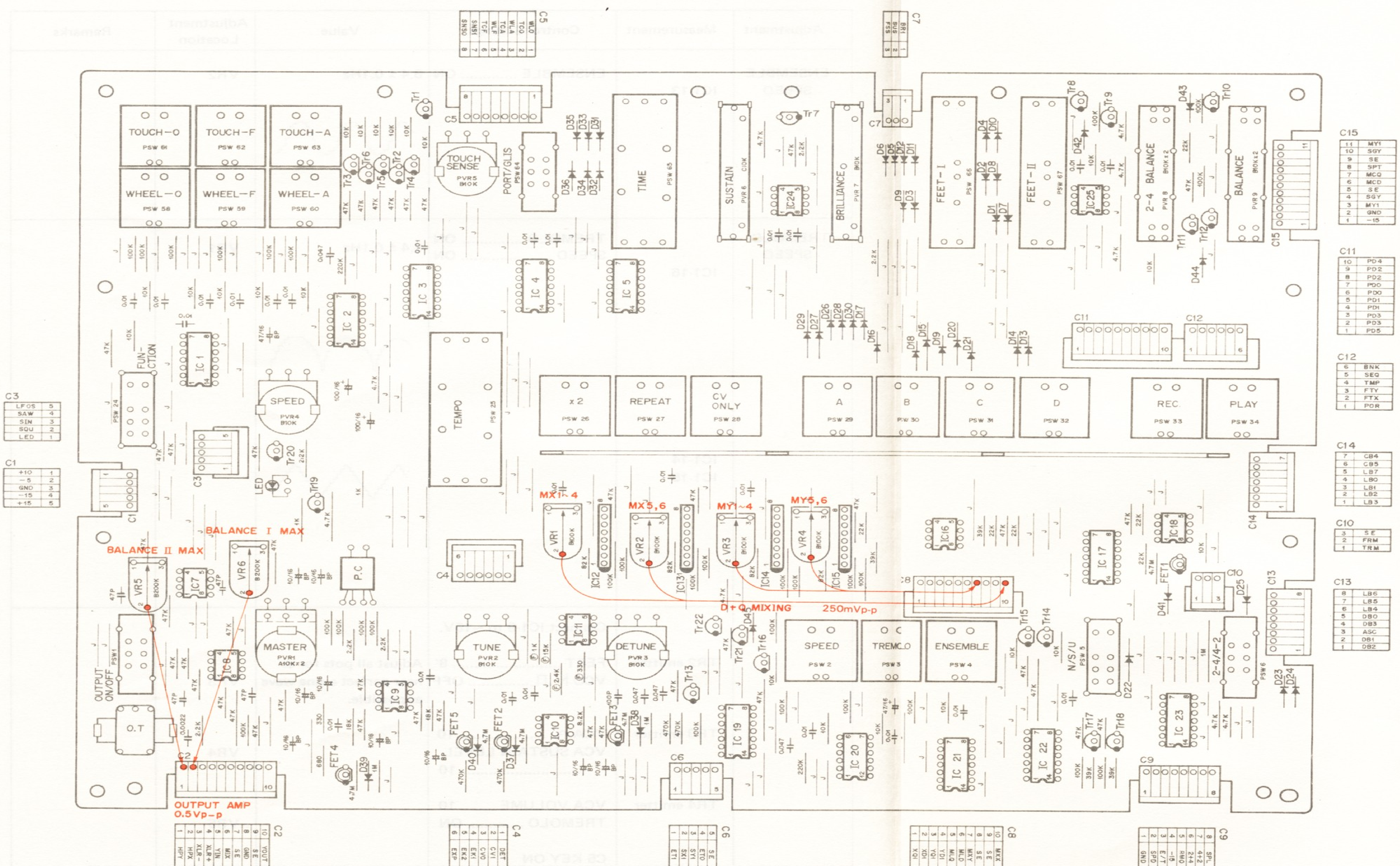
P W	1
FT4	2
FT1	3
FT3	4
FT2	5
DTN	6
SIN	7
OMD	8
+10	9
−5	10
SQU	11
SAW	12
HPF	13
BPF	14
WNS	15
—	16
—	17
—	18
FRQ	19
FMD	20
BR1	21
RES	22

C3

EDP	1
LPF	2
VOL	3
INV	4
FA	5
FD	6
FR	7
FS	8
−15	9
−15	10
GND	11
GND	12
GND	13
+15	14
+15	15
FX5	16
AX5	17
AS	18
AMD	19
AA	20
AD	21
AR	22

CPA CIRCUIT BOARD

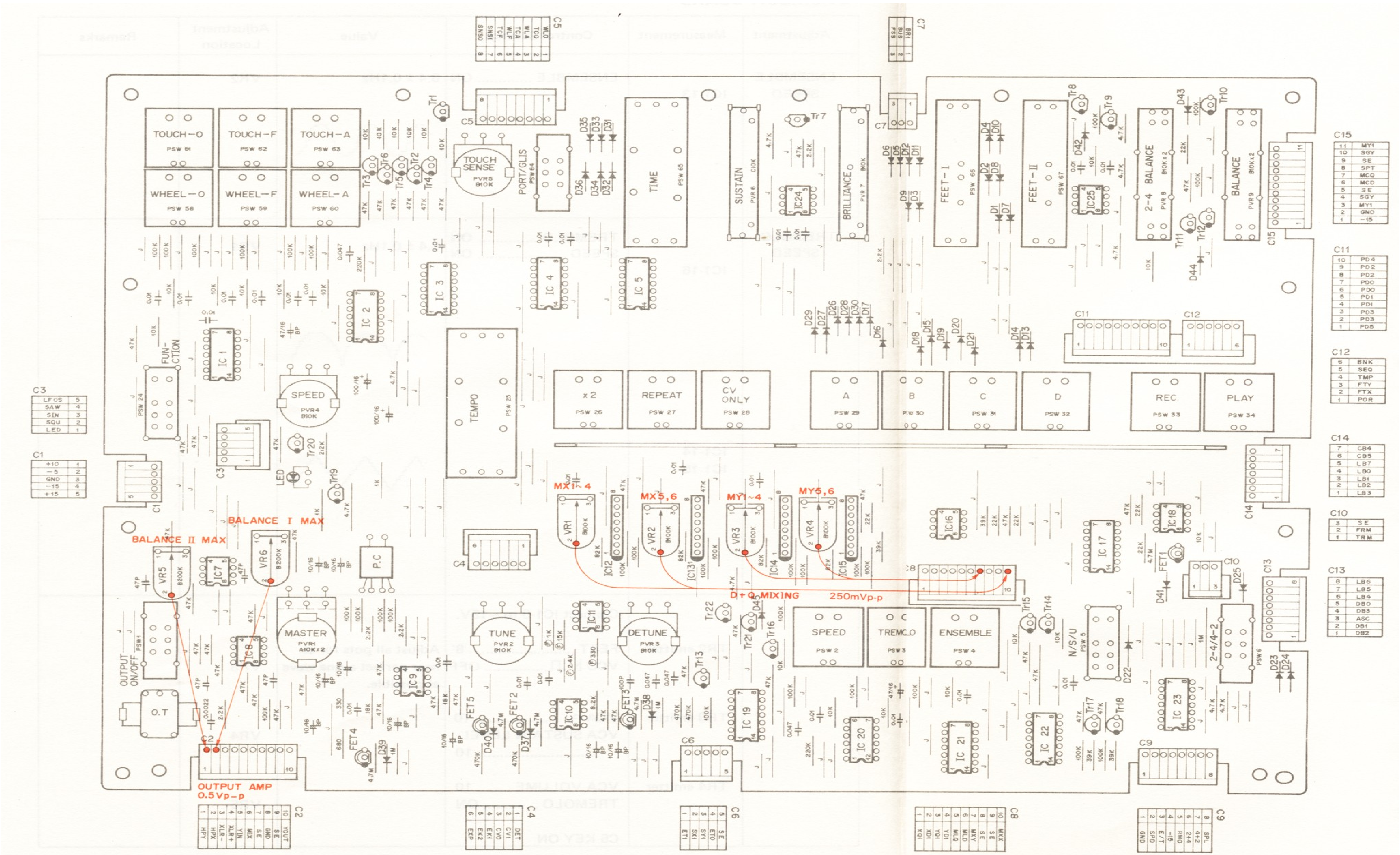
Adjustment	Measurement	Control Settings	Value	Adjustment Location	Remarks
D + Q Mixing		MODE SWITCH ..... NORMAL PROGRAM SWITCH ..... MANUAL VCO ⅄, ⎍ ..... OFF FEET ..... 8' VCA ∿ ..... 10 VCA SUSTAIN LEVEL ..... 10 C5 KEY ON			
	MXX (C8-10) MXY (C8-7)	1) MX1-4 oscillating 2) MX5,6 oscillating 3) MY1-4 oscillating 4) MY5,6 oscillating	250 ± 20mVp-p	VR1 VR2 VR3 VR4	
Output Amplifier		Same settings as above. OUTPUT SWITCH ..... OFF OUTPUT VOLUME ..... 10 C5 KEY ON			
	HPX (C2-2) HPY (C2-1)	1) BALANCE ..... I 2) BALANCE II	0.5 ± 0.05Vp-p	VR6 VR5	



TOUCH—O
TOUCH—F
TOUCH—A
WHEEL—O
WHEEL—F
WHEEL—A
TOUCH SENSE
PORT/GLIS
TIME
SUSTAIN
BRILLIANCE
FEET—I
FEET—II
2-4 BALANCE
BALANCE
FUN-CTION
SPEED
TEMPO
x 2
REPEAT
CV ONLY
A
B
C
D
REC.
PLAY
MX1~4
MX5,6
MY1~4
MY5,6
BALANCE I MAX
BALANCE II MAX
D+O MIXING
250mVp-p
OUTPUT ON/OFF
MASTER
TUNE
DETUNE
SPEED
TREMOLO
ENSEMBLE
N/S/U
2-4/4-2
O.T
OUTPUT AMP
0.5Vp-p
C3
LFOS
SAW
SIN
SQU
LED
C1
+10
−5
GND
−15
+15
C15
MY1
SGY
SE
SPT
MCQ
MCD
SE
SGY
MY1
GND
−15
C11
PD4
PD2
PD2
PDO
PDO
PD1
PD1
PD3
PD3
PD5
C12
BNK
SEQ
TMP
FTY
FTX
POR
C14
CB4
CB5
LB7
LB0
LB1
LB2
LB3
C10
SE
FRM
TRM
C13
LB6
LB5
LB4
DB0
DB3
ASC
DB1
DB2
C2
HPY
XLR−
XLR+
YIN
MIX
SE
GND
YOUT
C4
EXP
EX2
EX1
CVO
CV1
DET
C6
ET1
SX1
SY1
ETO
SE
C8
XOI
XOX
YOI
YDI
MLQ
MLD
MXY
SE
SE
MXX
C9
GND
SPO
E/T
−15
RMO
2+4
4+2
SPL
C5
SNSO
SNS1
TCF
TCA
WLF
WLA
TCO
WLO
C7
FSS
SUS
BRI

CPA CIRCUIT BOARD

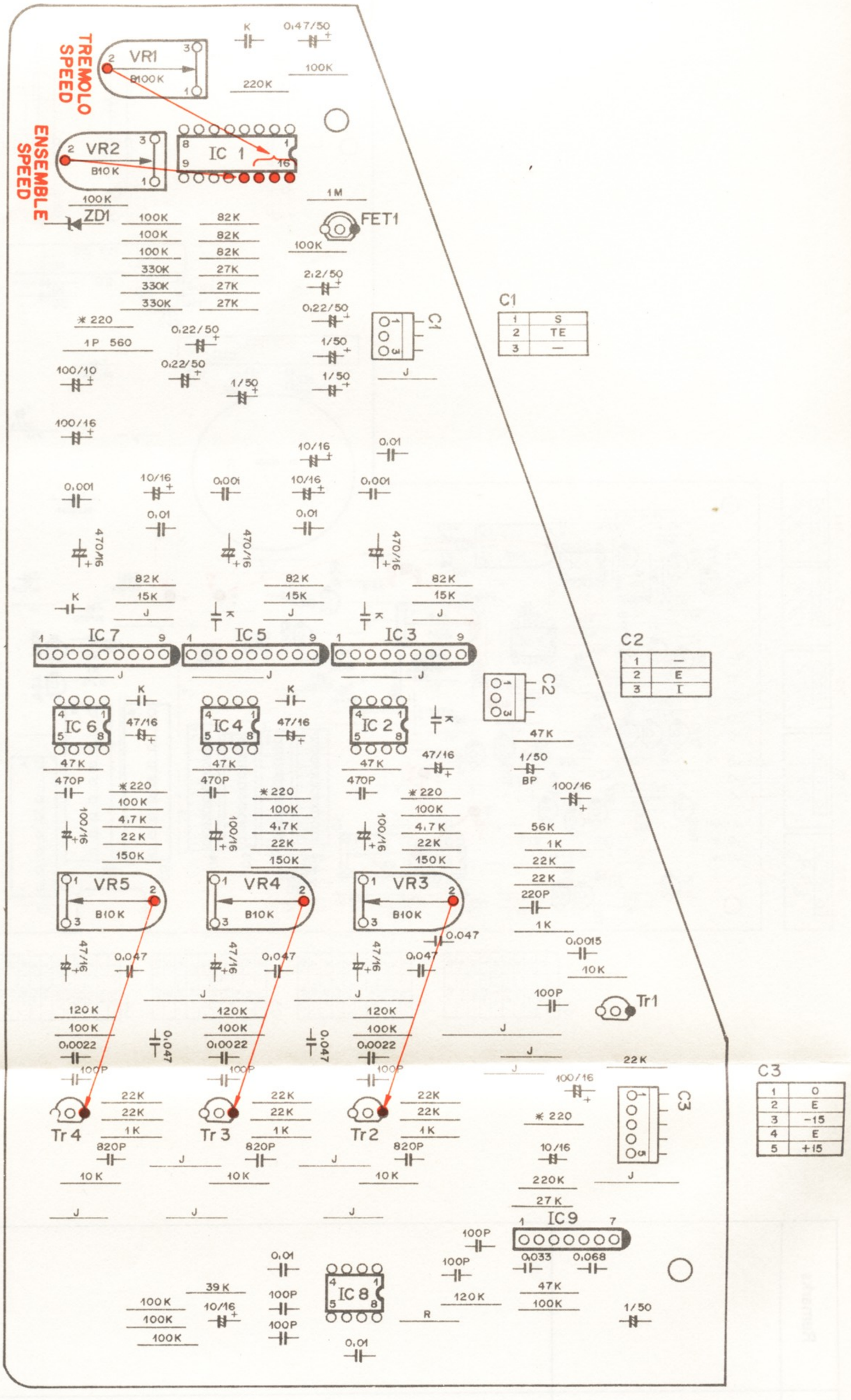
Adjustment	Measurement	Control Settings	Value	Adjustment Location	Remarks
D + Q Mixing		MODE SWITCH ..... NORMAL PROGRAM SWITCH ..... MANUAL VCO ⅄, ⎍ ..... OFF FEET ..... 8' VCA ∿ ..... 10 VCA SUSTAIN LEVEL ..... 10 C5 KEY ON			
	MXX (C8-10) MXY (C8-7)	1) MX1-4 oscillating 2) MX5,6 oscillating 3) MY1-4 oscillating 4) MY5,6 oscillating	250 ± 20mVp-p	VR1 VR2 VR3 VR4	
Output Amplifier		Same settings as above. OUTPUT SWITCH ..... OFF OUTPUT VOLUME ..... 10 C5 KEY ON			
	HPX (C2-2) HPY (C2-1)	1) BALANCE ..... I 2) BALANCE II	0.5 ± 0.05Vp-p	VR6 VR5	



TOUCH-O PSW 61
TOUCH-F PSW 62
TOUCH-A PSW 63
WHEEL-O PSW 58
WHEEL-F PSW 59
WHEEL-A PSW 60
TOUCH SENSE PVR5 B10K
PORT/GLIS PSW 64
TIME PSW 65
SUSTAIN PVR 6 C10K
BRILLIANCE PVR 7 B10K
FEET-I PSW 66
FEET-II PSW 67
2-4 BALANCE PVR 8 B10Kx2
BALANCE PVR 9 B10Kx2
FUNCTION PSW 24
SPEED PVR4 B10K
TEMPO PSW 25
x2 PSW 26
REPEAT PSW 27
CV ONLY PSW 28
A PSW 29
B PSW 30
C PSW 31
D PSW 32
REC. PSW 33
PLAY PSW 34
MX1~4
MX5,6
MY1~4
MY5,6
BALANCE II MAX
BALANCE I MAX
D+Q MIXING
250mVp-p
MASTER PVR1 A10Kx2
TUNE PVR2 B10K
DETUNE PVR3 B10K
SPEED PSW 2
TREMOLO PSW 3
ENSEMBLE PSW 4
N/S/U PSW 5
2-4/4-2 PSW 6
OUTPUT ON/OFF PSW1
O.T
OUTPUT AMP
0.5Vp-p
C3: LFOS 5, SAW 4, SIN 3, SQU 2, LED 1
C1: +10 1, -5 2, GND 3, -15 4, +15 5
C5: WLO 1, TCO 2, WLA 3, TCA 4, WLF 5, TCF 6, SNS1 7, SNSO 8
C7: BR1 1, SUS 2, FSS 3
C15: 11 MY1, 10 SGY, 9 SE, 8 SPT, 7 MCQ, 6 MCD, 5 SE, 4 SGY, 3 MY1, 2 GND, 1 -15
C11: 10 PD4, 9 PD2, 8 PD2, 7 PD0, 6 PD0, 5 PD1, 4 PD1, 3 PD3, 2 PD3, 1 PD5
C12: 6 BNK, 5 SEQ, 4 TMP, 3 FTY, 2 FTX, 1 POR
C14: 7 CB4, 6 CB5, 5 LB7, 4 LB0, 3 LB1, 2 LB2, 1 LB3
C10: 3 SE, 2 FRM, 1 TRM
C13: 8 LB6, 7 LB5, 6 LB4, 5 DB0, 4 DB3, 3 ASC, 2 DB1, 1 DB2
C2: 1 HPY, 2 HPX, 3 XLR-, 4 XLR+, 5 YIN, 6 MIX, 7 SE, 8 SE, 9 GND, 10 VOUT
C4: 1 DET, 2 CVI, 3 CVO, 4 EKI, 5 EK2, 6 EXP
C6: 1 ETI, 2 SXI, 3 SYI, 4 ETO, 5 SE
C8: 1 XOI, 2 YOI, 3 YOI, 4 MLO, 5 MLO, 6 MYY, 7 MXX, 8 SE, 9 SE, 10 MXX
C9: 1 GND, 2 SPD, 3 E/T, 4 -15, 5 RMD, 6 2+4, 7 4+2, 8 SPL

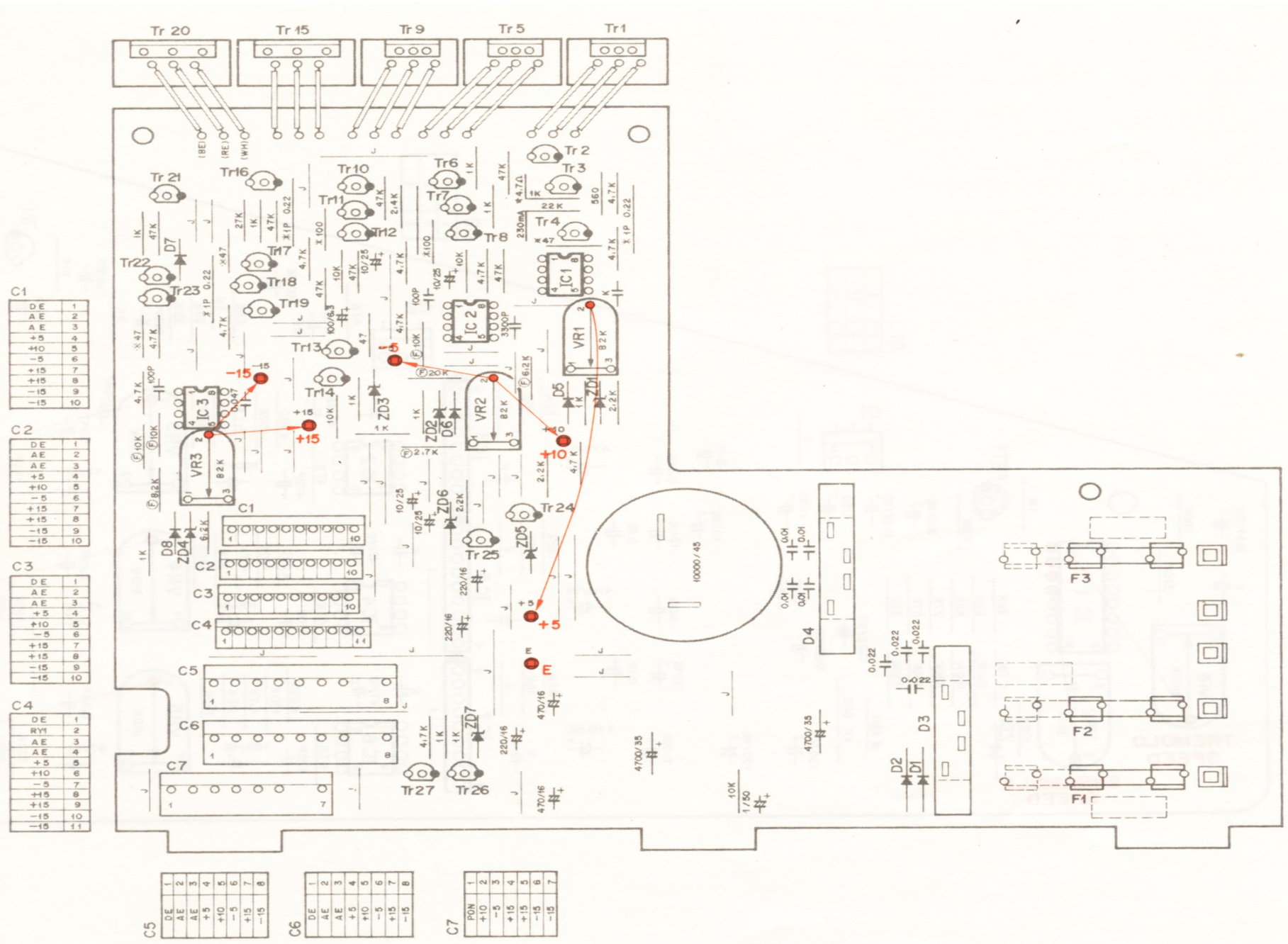
ET CIRCUIT BOARD

Adjustment	Measurement	Control Settings	Value	Adjustment Location	Remarks
ENSEMBLE SPEED	IC1-13	ENSEMBLE ..... ON	6.4 ± 0.1Hz 	VR2	
TREMOLO SPEED	IC1-16	TREMOLO ..... ON SPEED ..... ON	6.4 ± 0.1Hz 	VR1	
	IC1-14 IC1-15				
	TR2 emitter	Connect IC1-9 to −15V. FEET ..... 8' VCO ⋀ ,⎍..... OFF	Adjust all pots for as near perfect a sine wave as possible.	VR3	
	TR3 emitter	VCA ∿ ..... 10 VCA SUSTAIN LEVEL 10		VR4	
	TR4 emitter	VCA VOLUME ..... 10 TREMOLO ..... ON C5 KEY ON		VR5	


TREMOLO SPEED
ENSEMBLE SPEED
VR1
B100K
VR2
B10K
IC 1
ZD1
FET1
C1
C2
C3
IC 7
IC 5
IC 3
IC 6
IC 4
IC 2
IC 8
IC 9
VR5
VR4
VR3
Tr1
Tr2
Tr3
Tr4
C1
1 S
2 TE
3 —
C2
1 —
2 E
3 I
C3
1 0
2 E
3 -15
4 E
5 +15

DC CIRCUIT BOARD

Adjustment	Measurement	Control Settings	Value	Adjustment Location	Remarks
Battery Voltage	+ 5V		+ 5 ± 0.1V	VR1	
	+10V		+10 ± 0.1V	VR2	
	−5V		−5 ± 0.2V		
	+15V		+15 ± 0.05V	VR3	
	−15V		−15 ± 0.2V		



C1

DE	1
AE	2
AE	3
+5	4
+10	5
-5	6
+15	7
+15	8
-15	9
-15	10

C2

DE	1
AE	2
AE	3
+5	4
+10	5
-5	6
+15	7
+15	8
-15	9
-15	10

C3

DE	1
AE	2
AE	3
+5	4
+10	5
-5	6
+15	7
+15	8
-15	9
-15	10

C4

DE	1
RYI	2
AE	3
AE	4
+5	5
+10	6
-5	7
+15	8
+15	9
-15	10
-15	11

C5

DE	1
AE	2
AE	3
+5	4
+10	5
-5	6
+15	7
-15	8

C6

DE	1
AE	2
AE	3
+5	4
+10	5
-5	6
+15	7
-15	8

C7

PON	1
+10	2
-5	3
+15	4
+15	5
-15	6
-15	7

YAMAHA

DUAL CHANNEL
POLYPHONIC SYNTHESIZER

CS-70M

PARTS LIST

CONTENTS

Printed in Japan

A. Electronic Components

	Ref. No.	Part No.	Description	部品名		Remarks	Common Model	Markets
※		NA 80 77 10	Circuit Board, CPA	# 8694	C P A シ ー ト			
※		NA 80 77 20	– do. – , CPB	# 8695	C P B シ ー ト			
※		NA 80 77 30	– do. – , MY	# 8696	M Y シ ー ト			
※		NA 80 77 40	– do. – , MO	# 8697	M O シ ー ト			
※		NA 80 77 50	– do. – , CPU	# 8698	C P U シ ー ト			
※		NA 80 77 60	– do. – , DIF	# 8699	D I F シ ー ト			
※		NA 80 77 70	– do. – , LF	# 8700	L F シ ー ト			
※		NA 80 77 80	– do. – , JK	# 8701	J K シ ー ト			
※		NA 80 78 10	– do. – , ET	# 8704	E T シ ー ト			
※		NA 80 82 70	– do. – , MX	# 8696	M X シ ー ト			
※		NA 80 82 80	– do. – , DC	# 8707	D C シ ー ト			J
※		NA 80 82 90	– do. – , – do. –	– do. –	〃			U, C
※		NA 80 83 00	– do. – , – do. –	– do. –	〃			G
※		NA 80 83 20	– do. – , AC	# 8726	A C シ ー ト			J
※		NA 80 83 30	– do. – , – do. –	– do. –	〃			U
※		NA 80 83 40	– do. – , – do. –	– do. –	〃			G
※		NA 10 72 60	– do. – , – do. –	– do. –	〃			C
		NA 10 17 60	– do. – , MK		M K シ ー ト		CP10	
		iG 00 11 70	IC	TC4001BP	I C	NOR		
		iG 00 11 80	– do. –	TC4013BP	〃	D Flip-Flop		
		iG 00 12 40	– do. –	TC4011BP	〃	2-input NAND		
		iG 00 12 60	– do. –	TC4049BP	〃	Inverter		
		iG 00 12 70	– do. –	TC4066BP	〃	Quad Bilateral Switch		
		iG 00 13 90	– do. –	NJM4558DV	〃	Dual OP Amp		
		iG 00 14 40	– do. –	TC4071BP	〃	OR		
		iG 00 15 00	– do. –	M51620P	〃	VCOII		
		iG 00 15 10	– do. –	M51621L	〃	VCA		
		iG 00 15 30	– do. –	M51623P	〃	VCOIII		
		iG 00 15 60	– do. –	M51626P	〃	VCF		
		iG 00 15 80	– do. –	M51628P	〃	W.S.C.		
		iG 00 15 90	– do. –	M51629P	〃	EG-VCA		
		iG 00 16 20	– do. –	μA796HC	〃	Ring Modulator		
		iG 00 16 90	– do. –	TC4016BP	〃	Quad Bilateral Switch		
		iG 00 17 30	– do. –	TC4073BP	〃	AND		
		iG 00 17 60	– do. –	TC4081BP	〃	AND		
		iG 00 17 70	– do. –	TC4051BP	〃	Analog Switch		
		iG 02 55 00	– do. –	TA7504S	〃	OP Amp		
		iG 02 56 00	– do. –	TA7505M	〃	OP Amp		
		iG 02 60 00	– do. –	iG02600	〃	VCA		
		iG 02 69 10	– do. –	HD74LS00	〃	NAND		
		iG 02 70 10	– do. –	HD74LS04	〃	Inverter		
		iG 03 29 00	– do. –	iG03290	〃	BBD Driver		
		iG 03 36 00	– do. –	μPC624D	〃	D/A Converter		
		iG 03 48 00	– do. –	TA7317P	〃	Relay Driver		
		iG 03 55 00	– do. –	TC4028BP	〃	BCD to Decimal Decoder		
		iG 03 58 00	– do. –	TC40175BP	〃	D Flip-Flop		
		iG 03 59 10	– do. –	M58981P	〃	RAM CMOS		
		iG 03 74 70	– do. –	μPD4069C	〃	Hex Inverter		
		iG 04 33 00	– do. –	TC4093BP	〃	NAND		
		iG 04 37 00	– do. –	HD74LS08P	〃	AND		
		iG 04 40 00	– do. –	HD74LS74A	〃	D Flip-Flop		
		iG 04 42 00	– do. –	HD74LS138P	〃	Decoder/ Demultiplexer		

※ New Parts (新規部品) (J : Japan, U : US.American, C : Canadian, G : General)

	Ref. No.	Part No.	Description	部品名		Remarks	Common Model	Markets
		iG 04 44 00	IC	HD74LS161P	I C	Binary Counter		
		iG 04 61 00	– do. –	MN3009	〃	256BBD		
		iG 04 77 00	– do. –	TC4514P	〃	Decoder		
*		iG 04 96 00	– do. –	HD74LS14P	〃	Hex Schmitt Trigger Inverter		
*		iG 04 97 00	– do. –	HD74LS30P	〃	NAND		
*		iG 04 98 00	– do. –	HD74LS32P	〃	OR		
*		iG 04 99 00	– do. –	HD74LS139P	〃	Decoder/ Demultiplexer		
*		iG 05 00 00	– do. –	HD74LS174P	〃	D Flip-Flop		
*		iG 05 01 00	– do. –	HD74LS175P	〃	D Flip-Flop		
*		iG 05 02 00	– do. –	HD74LS253P	〃	Data Selector/ Multiplexer		
*		iG 05 03 00	– do. –	HD74LS293P	〃	Binary Counter		
*		iG 05 04 00	– do. –	HD74LS367P	〃	Hex Bus Driver		
*		iG 05 06 00	– do. –	HD74LS393P	〃	Binary Counter		
*		iG 05 07 00	– do. –	HD74LS374P	〃	D Flip-Flop		
*		iG 05 08 00	– do. –	TC40174BP	〃	D Flip-Flop		
*		iG 05 09 00	– do. –	TC4515BP	〃	Latch/Decoder		
*		iG 05 10 00	– do. –	TC40H004P	〃	Hex Inverter		
*		iG 05 11 00	– do. –	TC40H074P	〃	D Flip-Flop		
*		iG 05 14 00	– do. –	μPD780C	〃	CPU		
*		iG 05 15 00	– do. –	TC084CN	〃	OP Amp		
*		iG 05 19 00	– do. –	TC4020BP	〃	Counter		
*		iG 05 20 00	– do. –	HD14503BP	〃	Buffer		
*		iG 05 25 00	– do. –	TC082CP	〃	OP Amp		
*		iG 05 26 00	– do. –	HD74LS05P	〃	Hex Inverter		
*		iG 05 29 00	– do. –	M5L2114LP	〃	RAM NMOS		
*		iN 00 36 00	– do. –	μPD2716D	〃	PROM (IC49, CPU BOARD)		
*		iN 00 37 00	– do. –	– do. –	〃	PROM (IC50, CPU BOARD)		
*		iN 00 38 00	– do. –	– do. –	〃	PROM (IC51, CPU BOARD)		
		iT 63 30 00	– do. –	YM63300	〃	SECII		
		iA 09 50 00	Transistor	2SA950(Y)	トランジスタ			
		iA 10 15 70	– do. –	2SA1015(O,Y)	〃			
		iA 11 64 10	– do. –	2SA1164(GR)	〃			
		iB 05 60 00	– do. –	2SB560	〃			
		iB 05 96 30	– do. –	2SB596(O,Y)	〃			
		iB 06 88 00	– do. –	2SB688(R,O)	〃			
		iC 07 52 20	– do. –	2SC752(Y)	〃			
		iC 18 15 70	– do. –	2SC1815(O,Y)	〃			
		iC 21 20 00	– do. –	2SC2120	〃			
		iD 04 38 00	– do. –	2SD438	〃			
		iD 05 26 30	– do. –	2SD526(O,Y)	〃			
		iD 07 18 00	– do. –	2SD718(R,O)	〃			
		iE 00 00 10	FET	2SK30A(Y)	FET			
		iE 10 12 00	– do. –	2SK105(E)	〃			
		iE 10 12 30	– do. –	– do. –(F)	〃			
		iF 00 00 40	Diode	1S1555	ダイオード			
		iF 00 03 00	– do. –	1S1715P	〃			
		iF 00 04 30	– do. –	02Z6.8A	〃			
		iF 00 04 60	– do. –	1S1555	〃			
		iF 00 08 80	– do. –	WZ050	〃			
		iF 00 11 90	LED	TLR-124	LED			

* New Parts (新規部品)

Ref. No.	Part No.	Description	部品名		Remarks	Common Model	Markets
	iF 00 16 60	Diode	RD3.6EB1	ダイオード			
	iF 00 16 90	– do. –	RD5.6EB3	〃			
	iF 00 17 00	– do. –	RD15EB3	〃			
	iF 00 20 00	LED	SLC22VR	LED			
	iH 00 01 10	Diode	5B-2	ダイオード			
	iH 00 07 20	– do. –	W03B	〃			
	HQ 23 00 70	Slide Variable Resistor	B10KΩ	スライドボリューム	BRILLIANCE		
	HQ 23 00 90	– do. –	C10KΩ	〃	SUSTAIN		
※	HQ 23 01 60	– do. –	BH10KΩ x 2	〃	BALANCE		
※	HR 50 00 30	Rotary Variable Resistor	B10KΩ	ロータリーボリューム	Wheel PITCH		
	HS 31 05 70	– do. –	B10KΩ	〃	TUNE, DETUNE SPEED, FINE		
	HS 31 09 90	– do. –	A10KΩ x 2	〃	MASTER		
※	HS 42 03 10	– do. –	B10KΩ	〃	Wheel MOD		
※	HS 42 03 20	– do. –	B10KΩ	〃	TOUCH SENSE		
	HT 18 01 20	Semi Variable Resistor	B10K	半固定抵抗			
	HT 19 00 50	– do. –	B10KΩ	〃			
	HT 19 00 80	– do. –	B100KΩ	〃			
	HT 19 00 90	– do. –	B200KΩ	〃			
	HT 19 01 30	– do. –	B2KΩ	〃			
	HT 37 00 20	– do. –	B10KΩ	〃			
	HT 41 00 20	– do. –	B1KΩ	ソリッドボリューム			
	HT 41 00 30	– do. –	B2.2KΩ	〃			
	HT 41 00 70	– do. –	B10KΩ	〃			
	HT 41 00 90	– do. –	B100KΩ	〃			
	HT 41 01 00	– do. –	B220KΩ	〃			
	HT 41 01 20	– do. –	B470Ω	〃			
	HT 41 01 90	– do. –	B100KΩ	〃			
※	HT 41 03 30	– do. –	B220KΩ	〃			
※	HT 41 03 40	– do. –	B470KΩ	〃			
※	HT 69 00 40	– do. –	B5KΩ	半固定抵抗			
	HL 31 24 70	Metal Oxide Film Resistor	0.47Ω 1P	酸化金属皮膜抵抗			
	HL 32 36 80	– do. –	6.8Ω 2P	〃			
	HL 32 51 50	– do. –	150Ω 2P	〃			
	HL 51 22 20	– do. –	0.22Ω 1P	〃			
	HL 51 34 70	– do. –	4.7Ω 1P	〃			
	HL 51 53 30	– do. –	330Ω 1P	〃			
	HL 51 55 60	– do. –	560Ω 1P	〃			
	HU 57 53 00	Metal Film Resistor	300Ω	金属皮膜抵抗			
	HU 57 61 00	– do. –	1KΩ	〃			
	HU 57 61 80	– do. –	1.8KΩ	〃			
	HU 57 62 40	– do. –	2.4KΩ	〃			
	HU 57 62 70	– do. –	2.7KΩ	〃			
	HU 57 63 30	– do. –	3.3KΩ	〃			
	HU 57 66 20	– do. –	6.2KΩ	〃			
	HU 57 68 20	– do. –	8.2KΩ	〃			
	HU 57 69 10	– do. –	9.1KΩ	〃			
	HU 57 71 00	– do. –	10KΩ	〃			
	HU 57 71 50	– do. –	15KΩ	〃			

※ New Parts (新規部品)

	Ref. No.	Part No.	Description		部品名	Remarks	Commor Model	Markets
		HU 57 71 80	Metal Film Resistor	18KΩ	金属皮膜抵抗			
		HU 57 72 00	– do. –	20KΩ	〃			
		HU 57 73 90	– do. –	39KΩ	〃			
		HU 59 71 30	– do. –	13KΩ	〃			
		HU 59 71 40	– do. –	14KΩ	〃			
		HZ 00 12 10	– do. –	252.6KΩ	〃			
		HZ 00 12 20	– do. –	334.8KΩ	〃			
		HZ 00 12 30	– do. –	412.6KΩ	〃			
		HZ 00 12 40	– do. –	476.8KΩ	〃			
		HZ 00 12 50	– do. –	519.8KΩ	〃			
		HZ 00 12 60	– do. –	1.005KΩ	〃			
		HZ 00 17 30	– do. –	1KΩ	〃			
		HZ 00 17 40	– do. –	2KΩ	〃			
※		HZ 00 17 60	– do. –	10KΩ	〃			
※		HZ 00 17 70	– do. –	20KΩ	〃			
※		HZ 00 17 80	– do. –	40KΩ	〃			
※		HZ 00 17 90	– do. –	80KΩ	〃			
		HZ 00 18 30	– do. –	1.684KΩ	〃			
		HZ 00 18 70	– do. –	29.94KΩ	〃			
※		HZ 00 19 30	– do. –	100Ω	〃			
※		HZ 00 21 00	Module Resistor	10KΩ x 6	モジュール抵抗			
※		HZ 00 21 20	– do. –	10KΩ x 8	〃			
※		HZ 00 21 40	– do. –	10KΩ x 4	〃			
※		HZ 00 22 00	– do. –	47KΩ x 7	〃			
※		HZ 00 22 10	– do. –	100KΩ x 7	〃			
		HW 29 34 70	Fuse Resistor	2.7Ω/230mA	ヒューズ抵抗			
		FF 04 31 20	Polystyrene Capacitor	1200PF	防湿型スチコン			
		FL 63 71 00	Bipolar Capacitor	10μF/16V	バイポーラコンデンサ			
		FL 66 61 00	– do. –	1μF/50V	〃			
		FM 92 94 70	Electrolytic Capacitor	4700μF/35V	ケミコン			
※		FZ 00 16 40	– do. –	10000μF/45V	〃			
		FN 54 52 20	Solid Aluminum Capacitor	0.22μF/25V	固体アルミコンデンサ			
		FN 54 61 00	– do. –	1μF/25V	〃			
		FN 64 52 20	– do. –	0.22μF/25V	〃			
		FN 64 61 00	– do. –	1μF/25V	〃			
		FP 04 62 20	Tantalum Capacitor	2.2μF/25V	タンタルコンデンサ			
		FZ 00 22 50	Spark Suppressor Cap.	0.022μF/250V	スパークキラー			
		FZ 00 28 50	Ceramic Capacitor	0.0022μF	セラコン			U
		KA 10 08 10	Power Switch		パワースイッチ			G
		KA 10 10 60	– do. –		〃			J, U
		KA 30 06 00	– do. –		〃			C
		KA 40 05 70	Slide Switch	2 – 2 (S)	スライドスイッチ	2–4/4–2 (SPLIT)		
		KA 40 05 90	– do. –	2 – 3 (NS)	〃	FUNCTION		

※ New Parts (新規部品)

	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets
		KA 40 06 00	Slide Switch	2 – 2 (NS)	スライドスイッチ	OUTPUT ON/OFF PORT/GLIS		
		KA 40 06 30	– do. –	2 – 3 (S)	〃	N/S/U (MODE)		
		KA 40 07 00	– do. –		〃	PGM Lock		
		KA 40 08 00	– do. –	6	〃	FEET		
		KA 40 08 10	– do. –		〃	Keycode ON/OFF		
		KA 90 17 00	Push Switch	Gray	プッシュスイッチ			
		KA 90 17 10	– do. –	White	〃			
※		KA 90 26 80	– do. –	Red	〃			
※		KA 00 01 30	Linear Encoder		リニアエンコーダー	TEMPO,TIME,EG,DEPTH ADSR,CUTOFF,RESO		
		KA 40 08 30	Voltage Selector		電圧切換器			
※		KC 00 12 10	Relay	SC12D2-O(M)	リレー			
		iK 00 02 90	Photo Coupler	P873-13	フォトカプラー			
		iK 00 03 20	Photo Interrupter	GP-450F	フォトインタラプター			
		KB 00 03 60	Fuse	3A 250V	ヒューズ			J
		KB 00 06 90	– do. –	T2.5A 250V	〃			G
		KB 00 07 40	– do. –	T1.6A 250V	〃			G
		KB 00 26 50	– do. –	3A 250V	〃			U, C
※		QU 00 17 00	Ceramic Vibrator	CSA4.91MT	セラミック発振子			
		GD 90 02 50	Output Transformer		アウトプットトランス			
		GE 90 05 00	Coil		コイル			U
		GE 90 05 30	– do. –		〃			U
		NB 81 60 60	Card Reader Unit		カードリーダーユニット			
※		NB 81 79 00	Power Supply Unit		電源 Ass'y			J
※		NB 81 79 10	– do. –		〃			U, C
※		NB 81 79 30	– do. –		〃			G
※		NB 81 80 00	Power Transformer Unit		電源トランスユニット			
		MG 00 10 30	AC Cord		電源コード			J
		MG 00 10 40	– do. –		〃			U
		MG 00 10 50	– do. –		〃			G
		MG 00 11 20	– do. –		〃			C
※		MZ 80 95 90	Flat Cable Ass'y, CPB		線材キット			
※		MZ 80 96 00	– do. – , MOX		〃			
※		MZ 80 96 10	– do. – , MOY		〃			
		CB 07 28 80	Insulation Bushing		絶縁ブッシュ			
		iL 00 04 60	Mica Base		マイカベース			
		iL 00 05 80	– do. –		〃			
		LB 20 18 20	AC Inlet		ACインレット			J, U, C
		LB 20 18 60	– do. –		〃			G

※ New Parts (新規部品)

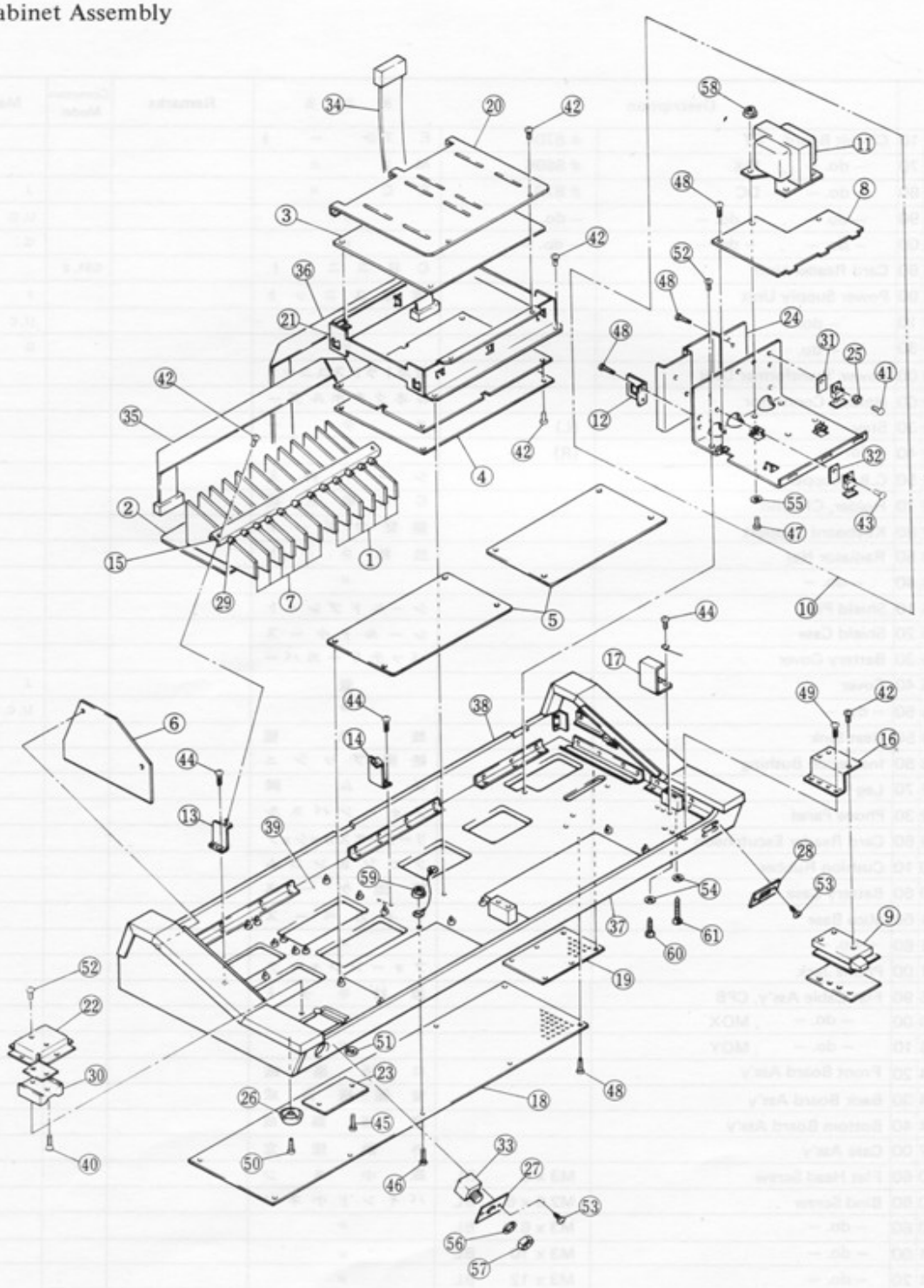
	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets
		LB 30 01 60	Cannon Socket		キャノンソケット			
		LB 20 11 20	Phone Jack		フォーンジャック			
		LB 20 15 40	– do. –	S-G7652	〃			
※		LB 30 14 90	– do. –	S-G7633	〃			
		LB 40 10 00	– do. –		〃			
		LB 30 09 60	Connector Base Pin	3P	2.5ピッチベースピン	Bottom Entry		
		LB 50 03 70	– do. –	5P	〃	– do. –		
		LB 60 29 90	– do. –	6P	〃	– do. –		
		LB 60 30 00	– do. –	7P	〃	– do. –		
		LB 60 30 10	– do. –	8P	〃	– do. –		
		LB 60 30 60	– do. –	9P	〃	– do. –		
		LB 60 30 70	– do. –	10P	〃	– do. –		
		LB 60 31 10	– do. –	11P	〃	– do. –		
		LB 30 07 30	– do. –	3P	〃	Top Entry		
		LB 40 05 70	– do. –	4P	〃	– do. –		
		LB 50 02 50	– do. –	5P	〃	– do. –		
		LB 60 29 40	– do. –	6P	〃	– do. –		
		LB 60 24 60	– do. –	7P	〃	– do. –		
		LB 60 24 90	– do. –	8P	〃	– do. –		
		LB 60 30 40	– do. –	9P	〃	– do. –		
		LB 60 24 70	– do. –	10P	〃	– do. –		
		LB 60 30 90	– do. –	11P	〃	– do. –		
		LB 30 07 50	– do. –	3P	〃	Side Entry		
		LB 40 05 90	– do. –	4P	〃	– do. –		
		LB 50 02 70	– do. –	5P	〃	– do. –		
		LB 60 25 00	– do. –	7P	〃	– do. –		
		LB 30 07 20	Connector Housing	3P	2.5ピッチハウジング			
		LB 40 05 60	– do. –	4P	〃			
		LB 50 02 40	– do. –	5P	〃			
		LB 60 28 10	– do. –	6P	〃			
		LB 60 24 40	– do. –	7P	〃			
		LB 60 24 80	– do. –	8P	〃			
		LB 60 30 30	– do. –	9P	〃			
		LB 60 24 50	– do. –	10P	〃			
		LB 60 30 80	– do. –	11P	〃			
		LB 60 24 30	Flat Cable Connector	30P	ヘッダー	Top Entry		
		LB 60 35 50	– do. –	26P	〃	– do. –		
※		LB 60 42 50	– do. –	30P	コネクター	Side Entry		
		LB 30 11 90	Receptacle Housing	3P	レセプタクルハウジング			
		LB 40 08 30	– do. –	4P	〃			
		LB 60 37 60	– do. –	7P	〃			
		LB 60 37 70	– do. –	8P	〃			
		LB 30 11 80	Plug Housing	3P	プラグハウジング			
		LB 40 08 20	– do. –	4P	〃			
		LB 60 37 40	– do. –	7P	〃			
		LB 60 37 50	– do. –	8P	〃			
		LB 60 15 40	Plug	9P	プラグ			
		LB 60 15 50	Cap	9P	キャップ			

※ New Parts (新規部品)

	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets
		LB 60 39 80	Connector	7P	コネクター			
		LB 60 39 90	– do. –	8P	〃			
		LB 60 40 30	Housing	7P	ハウジング			
		LB 60 40 40	– do. –	8P	〃			
※		LB 60 42 30	Connector	22P	コネクター			
※		LB 60 42 40	Socket	22P	ソケット			
		LB 60 39 40	– do. –	24P	〃			
		BB 00 44 30	Pin Contact		ピンコンタクト			
		BB 00 46 90	– do. –		〃			
		BB 00 49 90	– do. –		〃			
		LB 60 39 00	IC Socket	24P	ICソケット			
		LB 60 39 10	– do. –	40P	〃			
		LB 20 05 70	Fuse Holder Pin		ヒューズホルダーピン			

※ New Parts (新規部品)

B. Cabinet Assembly



	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets
*	1	NA 80 77 30	Circuit Board, MY	# 8696	M Y シ ー ト			
*	2	NA 80 77 40	– do. – , MO	# 8697	M O 〃			
*	3	NA 80 77 50	– do. – , CPU	# 8698	C P U 〃			
*	4	NA 80 77 60	– do. – , DIF	# 8699	D I F 〃			
*	5	NA 80 77 70	– do. – , LF	# 8700	L F 〃			

* New Parts (新規部品)

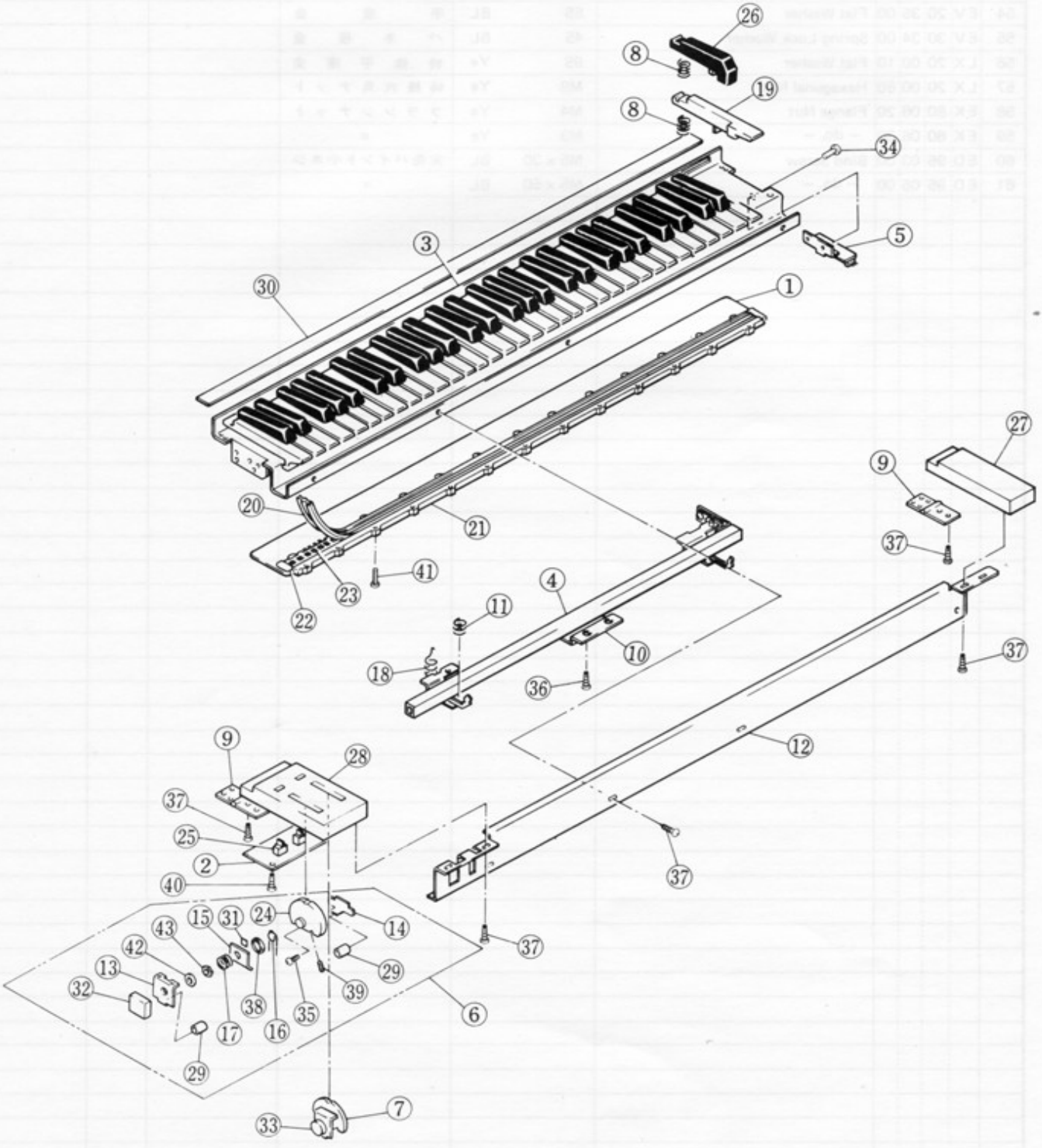
	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets
※	6	NA 80 78 10	Circuit Board, ET	#8704	ETシート			
※	7	NA 80 82 70	– do. – , MX	#8696	MX 〃			
※	8	NA 80 82 80	– do. – , DC	#8707	DC 〃			J
※	〃	NA 80 82 90	– do. – , – do. –	– do. –	〃			U, C
※	〃	NA 80 83 00	– do. – , – do. –	– do. –	〃			G
	9	NB 81 60 60	Card Reader Unit		CR ユニット		GS1, 2	
※	10	NB 81 79 00	Power Supply Unit		電源ユニット			J
※	〃	NB 81 79 10	– do. –		〃			U, C
※	〃	NB 81 79 30	– do. –		〃			G
※	11	NB 81 80 00	Power Transformer Unit		電源トランスユニット			
	12	AA 81 63 00	Holder, Connector		コネクタホルダー			
※	13	AA 81 72 30	Stay	(L)	ステー			
※	14	AA 81 72 40	– do. –	(R)	〃			
※	15	AA 81 72 50	C.B. Stopper		シート押え			
※	16	AA 81 72 70	Holder, CR Unit		CR取付板			
※	17	AA 81 72 80	Keyboard Support		鍵盤サポート			
※	18	AA 81 73 50	Radiator Net		放熱ネット			
※	19	AA 81 74 40	– do. –		〃			
※	20	AA 81 75 10	Shield Plate		シールドプレート			
※	21	AA 81 75 20	Shield Case		シールドケース			
※	22	AA 81 75 30	Battery Cover		バッテリーカバー			
※	23	AA 81 75 40	Cover		蓋			J
※	〃	AA 81 75 50	– do. –		〃			U, C, G
※	24	BA 80 54 50	Heat Sink		放熱板			
	25	CB 07 28 80	Insulation Bushing		絶縁ブッシュ			
	26	CB 80 12 70	Leg		ゴム脚			
※	27	CB 81 42 30	Phone Panel		フォーンパネル			
※	28	CB 81 89 60	Card Reader Escutcheon		リーダーエスカッション			
※	29	CB 81 90 10	Cushion Rubber		クッションゴム			
※	30	CB 81 90 60	Battery Case		電池ケース			
	31	iL 00 04 60	Mica Base		マイカベース			
	32	iL 00 05 80	– do. –		〃			
	33	LB 40 01 00	Phone Jack		フォーンジャック			
※	34	MZ 80 95 90	Flat Cable Ass'y, CPB		線材キット			
※	35	MZ 80 96 00	– do. – , MOX		〃			
※	36	MZ 80 96 10	– do. – , MOY		〃			
※	37	DA 80 64 20	Front Board Ass'y		口板集成			
※	38	DA 80 64 30	Back Board Ass'y		背面板集成			
※	39	DA 80 64 40	Bottom Board Ass'y		底板集成			
		DC 82 67 00	Case Ass'y		外装組立			
	40	EB 33 00 60	Flat Head Screw	M3 x 6 BL	皿小ネジ			
	41	ED 32 60 60	Bind Screw	M2.6 x 6 BL	バインド小ネジ			
	42	ED 33 00 60	– do. –	M3 x 6 BL	〃			
	43	ED 33 01 00	– do. –	M3 x 10 BL	〃			
	44	ED 33 01 20	– do. –	M3 x 12 BL	〃			
	45	ED 33 01 60	– do. –	M3 x 16 BL	〃			
	46	ED 33 02 00	– do. –	M3 x 20 BL	〃			
	47	ED 34 01 00	– do. –	M4 x 10 BL	〃			
	48	Ei 33 01 00	Bind Tapping Screw	3 x 10 BL	バインドタッピングネジ			
	49	Ei 33 01 20	– do. –	3 x 12 BL	〃			
	50	Ei 34 01 60	– do. –	4 x 16 Ye	〃			
	51	CB 81 29 20	Stopper		グリップ型止め輪			
	52	EL 34 01 40	Sems Screw	M4 x 14 BL	セムス小ネジ			

※ New Parts (新規部品)

Ref. No.	Part No.	Description			部品名	Remarks	Common Model	Markets
53	EM 33 01 20	Oval Head Tapping Screw	3 x 12	BL	丸皿タッピングネジ			
54	EV 20 35 00	Flat Washer	5S	BL	平座金			
55	EV 30 34 00	Spring Lock Washer	4S	BL	バネ座金			
56	LX 20 00 10	Flat Washer	9S	Ye	特殊平座金			
57	LX 20 00 60	Hexagonal Nut	M9	Ye	特殊六角ナット			
58	EK 80 06 20	Flange Nut	M4	Ye	フランジナット			
59	EK 80 06 30	– do. –	M3	Ye	〃			
60	ED 95 03 00	Bind Screw	M5 x 30	BL	尖先バインド小ネジ			
61	ED 95 05 00	– do. –	M5 x 50	BL	〃			

※ New Parts (新規部品)

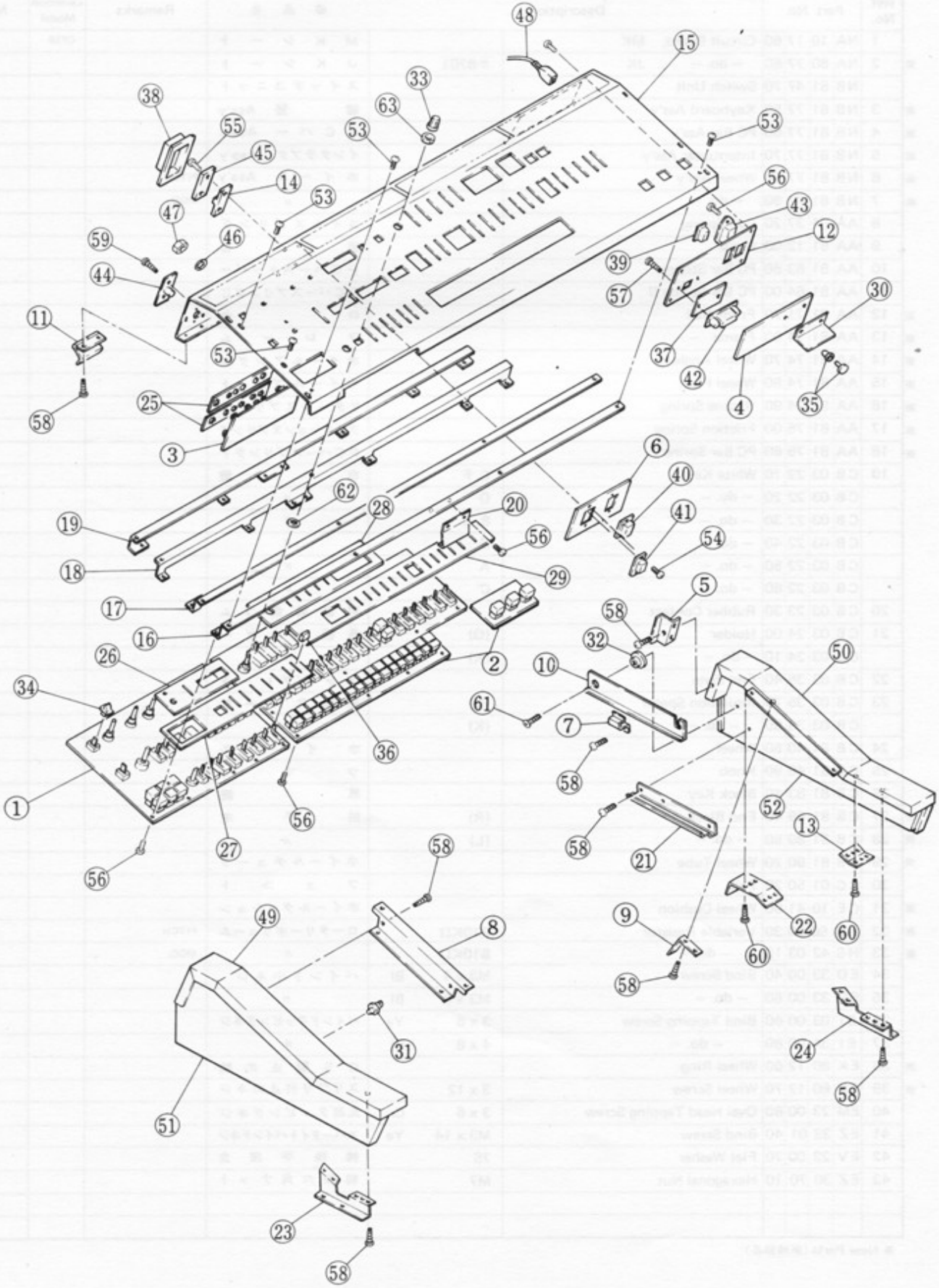
C. Keyboard Assembly



	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets
	1	NA 10 17 60	Circuit Board, MK		MKシート		CP10	
※	2	NA 80 77 80	— do. — , JK	#8701	JKシート			
		NB 81 47 70	Switch Unit		スイッチユニット			
※	3	NB 81 77 50	Keyboard Ass'y		鍵盤 Ass'y			
※	4	NB 81 77 60	PC Bar Ass'y		PCバー Ass'y			
※	5	NB 81 77 70	Interrupter Ass'y		インタラプタ Ass'y			
※	6	NB 81 77 80	Wheel Ass'y		ホイール Ass'y	PITCH		
※	7	NB 81 77 90	— do. —		〃	MOD.		
	8	AA 04 37 20	Coil Spring		コイルスプリング			
	9	AA 81 12 00	Hinge		蝶番			
	10	AA 81 63 80	PC Bar Stopper		PCバーストッパー			
	11	AA 81 64 00	PC Bar Spring II		PCバースプリングII			
※	12	AA 81 71 70	Front Rail		ロ金			
※	13	AA 81 74 60	Frame		フレーム			
※	14	AA 81 74 70	Wheel Angle		ホイールアングル			
※	15	AA 81 74 80	Wheel Plate		ホイールプレート			
※	16	AA 81 74 90	Retune Spring		リターンスプリング			
※	17	AA 81 75 00	Friction Spring		フリクションスプリング			
※	18	AA 81 75 60	PC Bar Spring I		PCバースプリングI			
	19	CB 03 22 10	White Key	C, F	白鍵			
		CB 03 22 20	— do. —	D	〃			
		CB 03 22 30	— do. —	B, E	〃			
		CB 03 22 40	— do. —	G	〃			
		CB 03 22 50	— do. —	A	〃			
		CB 03 22 60	— do. —	C'	〃			
	20	CB 03 23 30	Rubber Contact		可動導電ゴム			
	21	CB 03 24 00	Holder	(Q)	基板ホルダー			
		CB 03 24 10	— do. —	(K)	〃			
	22	CB 03 35 40	End Plate		エンドプレート			
	23	CB 03 35 70	Insulation Spacer	(Q)	絶縁スペーサ			
		CB 03 35 80	— do. —	(K)	〃			
	24	CB 81 40 50	Wheel		ホイール			
	25	CB 81 46 90	Knob		ツマミ			
	26	CB 81 83 40	Black Key		黒鍵			
※	27	CB 81 89 40	End Block	(R)	拍子木			
※	28	CB 81 89 50	— do. —	(L)	〃			
※	29	CB 81 90 20	Wheel Tube		ホイールチューブ			
	30	CC 01 50 20	Felt		フェルト			
※	31	CE 10 41 90	Wheel Cushion		ホイールクッション			
※	32	HR 50 00 30	Variable Resistor	B10KΩ	ロータリーボリューム	PITCH		
※	33	HS 42 03 10	— do. —	B10KΩ	〃	MOD.		
	34	ED 33 00 40	Bind Screw	M3 x 4 Bl	バインド小ネジ			
	35	ED 33 00 80	— do. —	M3 x 8 Bl	〃			
	36	Ei 03 00 60	Bind Tapping Screw	3 x 6 Ye	バインドタッピングネジ			
	37	Ei 34 00 80	— do. —	4 x 8 Bl	〃			
※	38	EK 80 12 60	Wheel Ring		CS型止め輪			
※	39	EK 80 12 70	Wheel Screw	3 x 12	スリワリ付止めネジ			
	40	EM 23 00 60	Oval Head Tapping Screw	3 x 6 Cr	丸皿タッピングネジ			
	41	EZ 33 01 40	Bind Screw	M3 x 14 Ye	エバータイトバインドネジ			
	42	EV 22 00 70	Flat Washer	7S	特殊平座金			
	43	EZ 30 70 10	Hexagonal Nut	M7	特殊六角ナット			

※ New Parts (新規部品)

D. Control Panel



	Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets
※	1	NA 80 77 10	Circuit Board, CPA	# 8694	C P A シート			
※	2	NA 80 77 20	– do. – , CPB	# 8695	C P B 〃			
※	3	NA 80 77 80	– do. – , JK	# 8701	J K 〃			
※	4	NA 80 83 20	– do. – , AC	# 8726	A C 〃			J
※		NA 80 83 30	– do. – , – do. –	– do. –	〃 〃			U
※		NA 80 83 40	– do. – , – do. –	– do. –	〃 〃			G
※		NA 10 72 60	– do. – , – do. –	– do. –	〃 〃			C
※	5	AA 05 24 40	Panel Holder		パネル取付金具			
※	6	AA 05 27 60	Switch Holder		スイッチ取付金具			
	7	AA 80 25 40	Stay Holder		ステー押え金具			
	8	AA 81 11 50	Panel Holder	(L)	パネル取付金具			
	9	AA 81 12 20	Prop Holder		引掛け金具			
	10	AA 81 12 30	Stay		ステー			
	11	AA 81 12 40	Hinge		蝶番			
	12	AA 81 55 10	AC Panel		A C パネル			G
		AA 81 64 50	– do. –		〃			J, U
		AA 81 76 10	– do. –		〃			C
	13	AA 81 56 40	Side Arm Angle		補強アングル			
	14	AA 81 65 00	Stopper Bracket		ストッパーブラケット			
※	15	AA 81 71 80	Control Panel		コントロールパネル			
※	16	AA 81 71 90	Circuit Board Angle	(A)	シート取付アングル			
※	17	AA 81 72 00	– do. –	(B)	〃			
※	18	AA 81 72 10	– do. –	(C)	〃			
※	19	AA 81 72 20	– do. –	(D)	〃			
※	20	AA 81 72 60	Panel Holder		パネル受け金具			
※	21	AA 81 73 00	Angle		シャーシ押え金具			
※	22	AA 81 73 20	– do. –		補強金具			
※	23	AA 81 73 30	Side Arm Angle	(L)	固定金具			
※	24	AA 81 73 40	– do. –	(R)	〃			
※	25	AA 81 76 00	Jack Spacer		ジャックスペーサー			
※	26	CA 80 29 50	Dust-Proof Cover	(A)	防塵クロス			
※	27	CA 80 29 60	– do. –	(B)	〃			
※	28	CA 80 29 70	– do. –	(C)	〃			
※	29	CA 80 29 80	– do. –	(D)	〃			
※	30	CA 80 31 10	Fuse Cover		ヒューズカバー			U
	31	CB 08 70 00	C.B. Holder		シートホルダー			
	32	CB 81 14 30	Bushing		ブッシュ			
	33	CB 81 21 40	Knob	White	ツマミ	Rotary VR		
	34	CB 81 46 90	– do. –		〃	Slide SW		
	35	CB 81 57 40	Nylon Rivet		ナイロンリベット			
	36	CB 81 69 80	Knob	White	ツマミ	Linear Encoder		
		CB 81 69 90	– do. –	Yellow	〃	Slide VR		
	37	CB 81 78 90	Spacer		スペーサー			
	38	CB 81 79 10	Cover		カバー			
	39	KA 10 08 10	Power Switch		パワースイッチ			G
		KA 10 10 60	– do. –		〃			J, U
		KA 30 06 00	– do. –		〃			C
	40	KA 40 07 00	Slide Switch		スライドスイッチ	PGM Lock		
	41	KA 40 08 10	– do. –		〃	Keycode ON/OFF		
	42	KA 40 08 30	Voltage Selector		電圧切換器			
	43	LB 20 18 20	AC Inlet		A C インレット			J, U, C
		LB 20 18 60	– do. –		〃			G
	44	LB 30 01 60	Cannon Socket		キャノンソケット			

※ New Parts (新規部品)

Ref. No.	Part No.	Description		部品名	Remarks	Common Model	Markets
45	LB 60 39 40	Connector Socket	24P	コネクタソケット			
46	LX 20 00 10	Flat Washer	9S	特殊平座金			
47	LX 20 00 60	Hexagonal Nut	M9	特殊六角ナット			
48	MG 00 10 30	AC Cord		電源コード			J
	MG 00 10 40	– do. –		〃			U
	MG 00 10 50	– do. –		〃			G
	MG 00 11 20	– do. –		〃			C
※ 49	DA 80 63 80	Side Arm Ass'y	(L)	腕木集成			
※ 50	DA 80 63 90	– do. –	(R)	〃			
※ 51	DA 80 64 00	Side Board Ass'y	(L)	側板集成			
※ 52	DA 80 64 10	– do. –	(R)	〃			
53	EC 33 00 50	Truss Screw	M3 x 5 BL	トラス小ネジ			
54	ED 32 60 40	Bind Screw	M2.6 x 4 BL	バインド小ネジ			
55	ED 32 60 80	– do. –	M2.6 x 8 BL	〃			
56	ED 33 00 60	– do. –	M3 x 6 BL	〃			
57	Ei 33 01 00	Bind Tapping Screw	3 x 10 BL	バインドタッピングネジ			
58	Ei 33 01 20	– do. –	3 x 12 BL	〃			
59	EM 23 00 60	Oval Head Tapping Screw	3 x 6 Cr	丸皿タッピングネジ			
60	EO 03 01 20	Flat Head Tapping Screw	3 x 12 Ye	皿タッピングネジ			
61	EO 34 01 60	– do. –	4 x 16 BL	〃			
62	EV 41 00 70	Toothed Lock Washer	A7S	歯付座金			
63	EZ 30 70 10	Hexagonal Nut	M7	特殊六角ナット			

※ New Parts (新規部品)